COMMERCE YEARBOOK

1928

Vol. I—UNITED STATES

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OF COMMERCE

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HERBERT HOOVER, SECRETARY

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1928

SIXTH NUMBER

Vol. I—UNITED STATES

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LETTER OF SUBMITTAL

DEPARTMENT OF COMMERCE,
BUREAU OF FOREIGN AND DOMESTIC COMMERCE,
Washington, June 15, 1928.

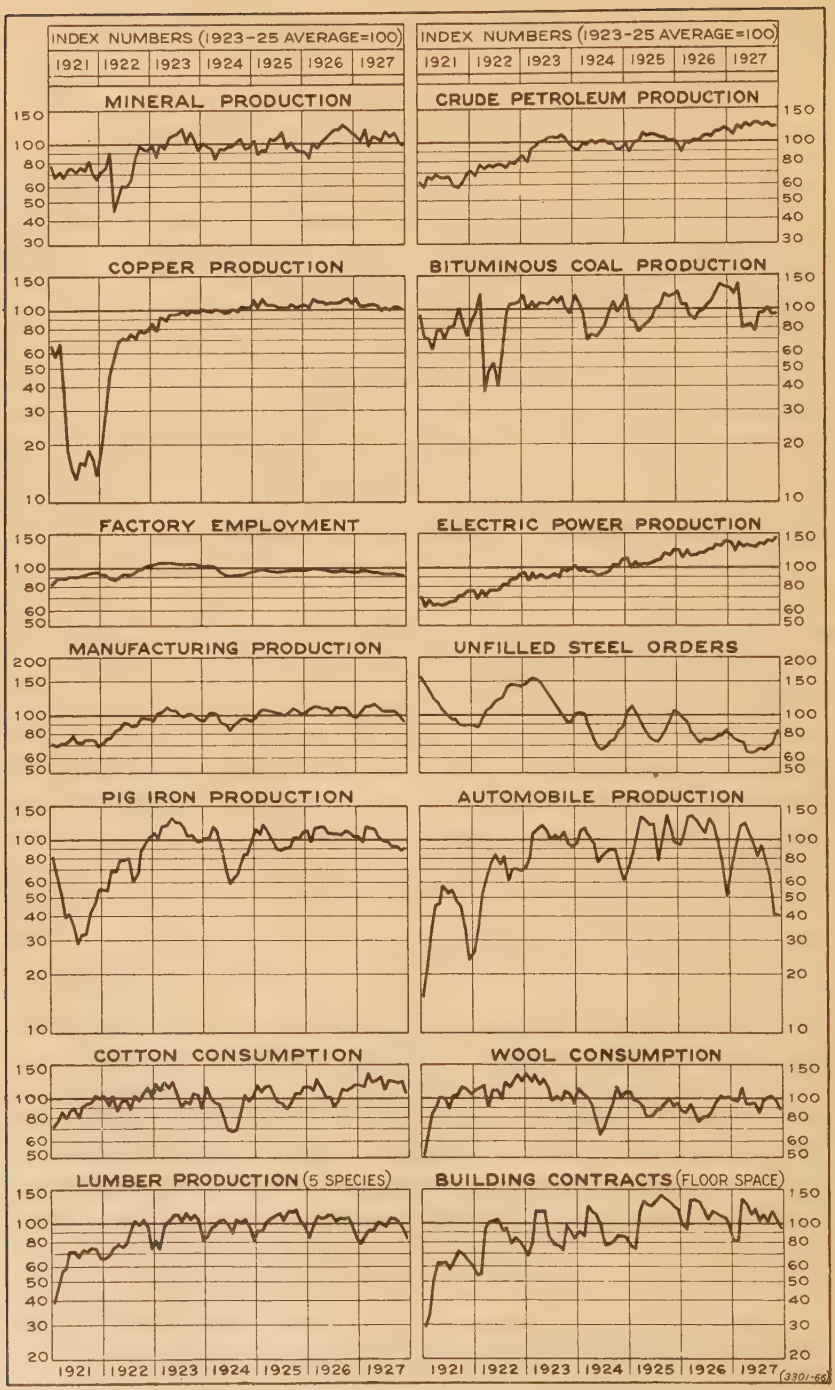
SIR: I have the honor to submit herewith for publication the sixth issue of the Commerce Yearbook. Commencing with this issue the Commerce Yearbook will be designated by the year in which it is published, rather than by the year under survey. Consequently, this 1928 issue is a survey of conditions in 1927 and there will be no issue bearing date 1927. The Commerce Yearbook was last year issued for the first time in two volumes in order to increase its scope and general usefulness. Volume I contains detailed information concerning business conditions in the United States and its noncontiguous territories and possessions, while Volume II contains similar data, though in somewhat less detail, for about 80 foreign countries.

Volume I of the Commerce Yearbook incorporates statistical information originally collected by numerous Government bureaus, trade associations, and trade journals. Particularly large quantities of material were drawn from the Bureau of Foreign and Domestic Commerce, the Bureau of the Census, and the Bureau of Mines, of this department, the Bureau of Agricultural Economics of the Department of Agriculture, the Federal Reserve Board, the Interstate Commerce Commission, the United States Shipping Board, the Bureau of Labor Statistics of the Department of Labor, and the American Iron and Steel Institute. These and other organizations have been helpful in many cases in furnishing data in advance of publication.

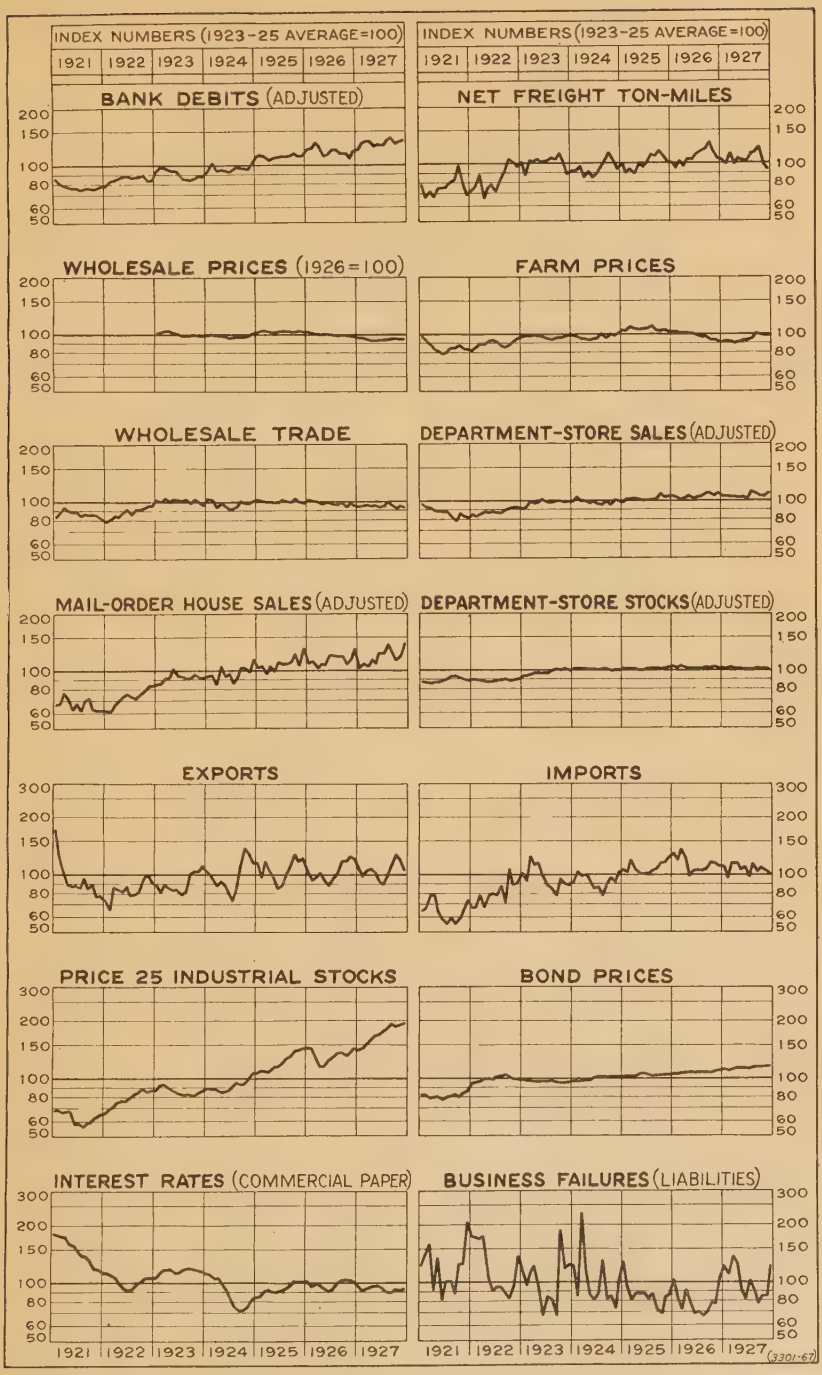
A large proportion of the work of summarizing and analyzing these statistics for the Yearbook has been performed in the division of statistical research. E. Dana Durand, the chief of this division, was absent during the preparation of this issue of the Yearbook, Lawrence B. Mann being acting chief. The preparation of tables and text has involved the cooperation of nearly every division and foreign office of the Bureau of Foreign and Domestic Commerce, the divisions of simplified practice and of building and housing of the Bureau of Standards, the division of statistics of the Bureau of Mines, and the division of survey of current business of the Bureau of the Census.

JULIUS KLEIN,
Director of Bureau.

Hon. HERBERT HOOVER,
Secretary of Commerce.


INDEX NUMBERS (1923-25 AVERAGE=100)
1921 1922 1923 1924 1925 1926 1927
MINERAL PRODUCTION
150 100 80 60 50 40 30
INDEX NUMBERS (1923-25 AVERAGE=100)
1921 1922 1923 1924 1925 1926 1927
CRUDE PETROLEUM PRODUCTION
150 100 80 60 50 40 30
COPPER PRODUCTION
150 100 80 60 50 40 30 20 10
BITUMINOUS COAL PRODUCTION
150 100 80 60 50 40 30 20 10
FACTORY EMPLOYMENT
150 100 80 60 50
ELECTRIC POWER PRODUCTION
150 100 80 60 50
MANUFACTURING PRODUCTION
200 150 100 80 60 50
UNFILLED STEEL ORDERS
200 150 100 80 60 50
PIG IRON PRODUCTION
150 100 80 60 50 40 30 20 10
AUTOMOBILE PRODUCTION
150 100 80 60 50 40 30 20 10
COTTON CONSUMPTION
150 100 80 60 50
WOOL CONSUMPTION
150 100 80 60 50
LUMBER PRODUCTION (5 SPECIES)
150 100 80 60 50 40 30 20
1921 1922 1923 1924 1925 1926 1927
BUILDING CONTRACTS (FLOOR SPACE)
150 100 80 60 50 40 30 20
1921 1922 1923 1924 1925 1926 1927
(3301-68)

BUSINESS BAROMETERS



Item and unit of measure	Pre-war [1]	1921	1922	1923	1924	1925	1926	1927
PRODUCTION								
Crops, value—millions of dollars	6, 341	7, 759	9, 430	10, 401	10, 770	10, 170	9, 266	[2]
Animal products, gross value—do	3, 702	5, 589	5, 651	6, 271	5, 902	6, 647	7, 300	[2]
Crops, quantity index (1910–1914=100)	100	100	110	110	111	112	114	115
Wheat—millions of bushels	690	815	868	797	864	676	831	872
Corn—do	2, 712	3, 069	2, 906	3, 054	2, 309	2, 917	2, 692	2, 786
Cotton, production—thousands of 500-lb. bales	13, 033	7, 954	9, 762	10, 140	13, 628	16, 104	17, 977	12, 950
Animal products marketed, index (1923–1925=100)		85	92	101	101	98	99	101
Beef and veal, inspected—millions of pounds	4, 108	4, 453	4, 969	5, 129	5, 328	5, 480	5, 757	5, 277
Pork and lard, inspected—do	5, 023	6, 723	7, 419	9, 182	8, 820	7, 323	7, 273	7, 731
Manufactures, quantity, index (1923–1925=100)		73	86	101	95	104	107	105
Minerals, quantity, index (1923–1925=100)		73	75	105	97	99	107	107
Pig iron—thousands of long tons	30, 966	16, 688	27, 220	40, 361	31, 406	36, 701	39, 373	36, 566
Steel ingots and castings—do	31, 301	19, 784	35, 603	44, 944	37, 932	45, 394	48, 294	44, 935
Cotton, consumption—thousands of bales	5, 483	4, 893	5, 910	6, 666	5, 681	6, 193	6, 456	7, 190
Lumber, estimated cut—millions of board feet	44, 000	30, 500	35, 000	39, 000	37, 000	39, 000	37, 500	35, 000
Automobiles and trucks—number in thousands	[3] 485	1, 595	2, 547	4, 020	3, 601	4, 266	4, 299	3, 394
Crude petroleum, production—thousands of barrels	248, 446	472, 183	557, 531	732, 407	713, 940	763, 743	770, 874	903, 800
Coal, production—thousands of short tons	569, 960	506, 395	476, 951	657, 904	571, 613	581, 870	657, 804	600, 456
Copper, smelter—short tons	612, 242	252, 793	475, 143	717, 500	817, 125	837, 435	869, 811	848, 000
Electric power generated—millions of kilowatt-hours [4]	17, 572	40, 976	47, 654	55, 665	59, 014	65, 870	73, 791	80, 205
Construction contracts, floor space—thousands of sq. ft.				678, 866	699, 320	887, 550	838, 430	803, 546
Construction contracts, value—millions of dollars				3, 981	4, 486	5, 822	6, 152	6, 084
Portland cement, production—thousands of barrels [5]	92, 097	98, 842	114, 790	137, 460	149, 358	161, 659	164, 530	171, 908
SALES AND PRICES								
Wholesale trade, value of sales, index (1923–1925=100)		87	89	101	98	101	98	95
Department stores, value of sales, index (1923–1925=100)		87	88	98	99	103	106	106
Mail-order houses, value of sales, index (1923–1925=100)		67	73	92	98	110	115	120

Wholesale prices, index (1913=100)	100	147	149	154	150	159	151	147
Wholesale prices, revised index [6] (1926=100)				101	98	104	100	95
Retail food prices, index (1913=100)	100	153	142	146	146	157	161	155
Cost of living, index (1913=100)	100	177	167	171	171	176	175	173
Export price index (1913=100)	[7] 100	150	138	146	143	144	133	124
Import price index (1913=100)	[7] 100	117	113	132	129	142	139	130
RAILROADS								
Revenue freight ton-miles (Class I roads)—millions	297, 723	306, 840	339, 285	412, 727	388, 415	413, 814	443, 746	429, 044
Car loadings, all commodities, index (1923–1925=100)		79	87	100	97	103	107	104
Net earnings (Class I roads)—millions of dollars	788	601	760	962	974	1, 121	1, 213	1, 069
FOREIGN TRADE								
Exports, domestic and foreign, value—millions of dollars	2, 166	4, 485	3, 832	4, 167	4, 591	4, 910	4, 809	4, 865
Imports, value—do	1, 689	2, 509	3, 113	3, 792	3, 610	4, 227	4, 431	4, 184
Net imports of gold and silver—do	[8] 37	679	246	296	222	[7] 169	75	[7] 15
Exports, quantity index (1913=100)	[7] 100	120	112	115	130	137	146	158
Imports, quantity index (1913=100)	[7] 100	120	154	161	156	166	178	180
BUSINESS FINANCE								
Debits to individual accounts:								
New York City—millions of dollars		207, 096	239, 855	238, 396	263, 531	313, 373	339, 055	391, 558
Other cities (140)—do		191, 941	199, 509	225, 330	228, 161	256, 691	268, 900	282, 345
Price, 25 industrial stocks (dollars per share)	58. 19	79. 38	98. 58	107. 78	115. 08	152. 65	165. 70	214. 54
Price, 25 railroad stocks (dollars per share)	82. 97	53. 21	62. 38	60. 15	67. 18	82. 48	93. 27	113. 81
Price, 40 bonds, index (par=100)	76. 76	60. 15	74. 11	71. 72	74. 32	77. 04	80. 36	83. 69
Commercial failures, liabilities—millions of dollars	273	627	624	539	543	444	409	520

[1] Pre-war figures represent the calendar or fiscal year 1913, except that agricultural statistics, meat production, and foreign-trade values represent the average for 5 years ending 1913 or 1914; electric power, 1912; bonds, 1915. Blanks in this column indicate lack of data.
[2] Not available.
[3] Figure represents production for both United States and Canada; not reported separately prior to 1919.
[4] Pre-war figures are on a slightly different basis from those for later years.
[5] Barrels of 376 pounds net.
[6] Wholesale prices computed on the new basis have not been carried back of 1923.
[7] Calendar year 1913.
[8] Average net exports.

SUMMARY

The business of the United States in 1927 was on a very high level, continuing the prosperity which has been characteristic of every year since 1921 and which reflects the steadily increasing efficiency of both industry and trade. There was, however, a recession in activity in some lines toward the close of the year, which has been in part recovered during the early months of 1928.

Manufacturing output, the best measure of general economic activity, was less by only an insignificant margin than the record attained in 1926. The somewhat more marked decline in railroad traffic was chiefly due to the abnormally large shipments of coal in 1926, the traffic of 1927 exceeding that in any other preceding year. Mineral output fully equaled the record volume of 1926, and crop production was larger than in any other recent year. In quantitative volume export trade was considerably larger than in other postwar years owing primarily to the continued growth of exports of manufactured goods, but the decided decline in average export prices, especially of certain raw staples, left the value somewhat below that of 1925, the peak figure of recent years. There was comparatively little quantitative change in our import trade, but also a material decline in prices of imported goods, including such major items as rubber and silk. Wholesale prices continued to decline during the first part of 1927 and the average for the year as a whole reached about the same low level as in 1921. Prices of farm products in central markets, however, advanced during the course of the year and at its close their purchasing power in terms of other commodities was higher than at any other time since January, 1920. The cost of living declined 2 per cent during 1927, the decline in retail food prices reaching 4 per cent, and in those of housing, fuel, and lighting about 3 per cent. Retail trade showed some expansion as compared with any preceding year.

Manufacturing, Mining, and Construction.

According to the index compiled by the Department of Commerce, manufacturing production in 1927 was the greatest ever attained except in 1926, being 44 per cent larger than in 1921. Owing to a slackening in the second half of the year, the total output was about 2 per cent less in quantitative volume than in 1926.

The activity in manufacturing industries was less evenly distributed in 1927 than in the immediately preceding years. Of the 13

groups of industries distinguished, 7 showed increases, 1 was unchanged, while 5 declined. The greatest relative gains in output were in the textile group, 9 per cent; and in the leather group, 6 per cent. The other groups showing increased production as compared with 1926 were those of tobacco products, rubber products, paper and printing, stone, clay and glass products, and chemicals and oils. Owing to the temporary discontinuance of production by one of the leading manufacturers of automobiles, the vehicle group showed a decline of output of 17 per cent as compared with 1926. Some of the most important changes in output among the individual industries, as distinguished from groups, in 1927 as compared with 1926 are shown in the following statement:

	Increase, per cent		Decrease, per cent
Petroleum, crude	17. 2	Locomotives	33. 6
Silk (mill consumption)	12. 3	Freight cars	29. 6
Cotton (mill consumption)	11. 3	Coke	10. 4
Gasoline	10. 3	Bituminous coal	9. 3
Gas and fuel oil	7. 4	Pig iron	7. 1
Rubber tire casings	5. 1	Motor trucks and busses	7. 1

Mineral production continued on a high level, equaling the record volume of 1926, and exceeding the figure for 1921 by 47 per cent, a slightly larger increase than that for manufacturing. The output of bituminous coal was greater than in many recent years, but considerably less than in 1926 when production was above normal because of exceptional foreign demand and anticipation of a possible strike the next year. Petroleum output on the other hand showed an unusually large increase as a result of the record-breaking production of the new Seminole field.

Building construction was again extremely active. The total value of construction contracts was substantially the same as in 1926, and more than 50 per cent greater than in 1923, itself a year of large activity compared with years still further back. Building construction throughout recent years has been a very important factor in maintaining strong demand for numerous classes of manufactured products. The total value of construction contracts awarded in 36 States in 1927 was $6,084,000,000, which was only about 1 per cent less than the record figure of 1926. There was a decline of about 4 per cent in the floor space of buildings covered by contracts, but the value of contracts awarded for construction of public utilities, public works, and other types not included in the floor space statistics increased by 14 per cent. There was some curtailment in residential construction and a decided reduction in the volume of contracts for industrial buildings, but a substantial increase appeared in awards for public buildings and for hospitals and institutions.

Factory employment declined during 1927 and averaged lower than in any of the four preceding years. The increasing efficiency of production has made possible an expansion of output with a curtailment of the quantity of labor. Most, if not all, of those leaving factory industries have been absorbed into other occupations, notably in distribution and in professional, domestic, and personal services. Great numbers have gone into employments connected with the sale, repair, and operation of automobiles, and the sale of supplies for automobiles. The decrease in factory employment in 1927 averaged 4 per cent for the year as a whole as compared with 1926. There were rather marked changes from month to month. The employment index of the Bureau of Labor Statistics rose to a peak in March, fell to a low point in July, advanced slightly in August and September, and declined again during the autumn, closing the year 6.4 per cent lower than in December of the year before. The index of the amount of pay rolls of factories for 1927 considered as a whole showed the same decline, 4 per cent, from 1926 as that of the number employed, indicating that the average earnings per worker employed remained constant, while cost of living declined about 2 per cent. Comparatively few changes in wage rates in manufacturing industries were reported. Average money wages continue to be about twice as high as before the war, an increase more marked than that in the cost of living. The workingman consequently continued to enjoy the highest real wage in our history.

Agriculture.

The total agricultural production of the United States has shown considerable increase in recent years and there has been an even greater gain in the average output per worker. The quantitative output of the farms was 8 per cent larger in 1925 than in 1919, while the output per farm worker showed an increase of 18 per cent. Complete data are not available for any year since 1925 but statistics of principal crops indicate that there was a continued expansion of output in both 1926 and 1927.

In manufacturing industries large production often accompanies relatively high prices and consequently results in prosperity for the producer. In agriculture, on the other hand, the volume of production is affected by conditions which are entirely outside of the control of producers, such as weather conditions. The total receipts of a large crop are often less than those of a small one. For these reasons changes in production of agricultural products may have a very different significance from changes in output of mining and manufacturing industries.

The acreage planted to crops during 1927 was slightly smaller than in 1926, but was larger than in any other year since 1919. The most significant change in the acreage of individual crops was a decrease

of 15 per cent in cotton. Cotton acreage expanded rapidly in the years from 1921 to 1926, but the record crop in the latter year caused a sharp drop in cotton prices which resulted in a marked reduction in the acreage planted in 1927. The general index of quantity of crop production showed a slight increase in 1927; production of barley, rye, hay, and potatoes increased substantially, while the cotton crop was much smaller.

The yield per acre of each of the leading cereal crops was larger in 1927 than in the preceding year and the total output was also larger, except in the case of oats. Wheat acreage which was much reduced in the period from 1919 to 1925, has been increased in the last two years and there was also an increase in the yield per acre in 1926 and 1927; as a result the wheat crop in 1927 was 5 per cent larger than in 1926 and was also greater than in any year since 1919.

The cotton crop totaled 12,950,000 bales in 1927 or 28 per cent less than in 1926. This decrease was brought about by reductions in both the acreage and yield per acre. The New Orleans price which had declined sharply in the fall of 1926 and averaged only 12 cents a pound in December advanced to 22 cents in September, 1927, but declined to 19 cents at the end of the year. The tobacco crop was smaller than in any year since 1921; production of all types except flue-cured tobacco was less than in 1926. Exports of leaf tobacco increased, but prices of the export types weakened considerably. Cigarette production continued to show a marked increase and the 1927 output was the largest on record.

Meat products in 1926 decreased slightly as a result of a decline of 8 per cent in the output of beef and veal, although that of pork products increased 6 per cent, and there was also a slightly larger output of mutton and lamb. Cattle prices showed a marked advance, while hog prices were lower than in 1926.

The weighted index of prices of farm products on the farm, compiled by the Department of Agriculture, was 3½ per cent lower for the year 1927 as a whole than in 1926, but closed the year 8 per cent higher than 12 months before. Monthly comparisons show considerable changes in the relation of the prices of farm products at central markets to the prices of other commodities during the past two years. During most of 1926 prices of farm products declined while other commodities showed little change and as a result the spread between the two groups widened until November of that year. Prices of nonagricultural commodities declined in the early months of 1927 and there was a sharp advance in prices of farm products during the summer, so that during the last quarter of the year they stood higher in relation to other prices than at any time since January, 1920.

For the calendar year 1927, as a whole, farm prices of fruits and vegetables averaged 18 per cent lower than in 1926 and prices of

poultry products and meat animals decreased 10 per cent and 5 per cent, respectively, while cotton and cottonseed showed an increase of 5 per cent, and grain prices changed but little. In December, 1927, all the groups of farm products were higher than a year, earlier, except meat animals and poultry products. The most notable change was in the price of cotton and cottonseed, which was 89 per cent higher than in December, 1926.

The following table which contains indexes compiled by the Departments of Labor and of Agriculture summarizes movements of prices of major agricultural products in the central markets and of the general index of farm prices on the farm.

Comparative Indexes of Prices of Farm and Other Commodities

[1910–1914=100]

Commodity	Calendar year averages							December	
	1921	1922	1923	1924	1925	1926	1927	1926	1927
CENTRAL MARKET PRICES									
All commodities	150	152	157	152	162	154	149	150	152
Domestic farm and food products	133	136	143	144	158	147	146	141	152
All other products	167	168	171	162	165	161	152	158	151
All grains [1]	134	124	125	141	172	148	145	142	146
Winter wheat	145	124	117	137	178	155	137	140	134
Spring wheat	152	135	120	131	163	156	138	145	131
Corn	91	98	130	152	163	119	137	119	137
Oats	90	93	105	122	110	100	115	112	132
Cotton, middling [2]	117	164	227	222	182	136	136	99	152
Livestock and poultry [1]	108	116	110	112	140	135	140	129	145
Cattle	108	116	125	125	134	125	160	127	176
Hogs	107	116	95	102	148	155	125	145	105
PRICES ON THE FARM									
General index	116	124	135	134	147	136	131	127	137

[1] Index based on 1913=100.
[2] Based on price per pound at New York.

Price Movement.

Wholesale, retail, and farm prices all averaged lower in 1927 than in either of the two preceding years. Wholesale prices reached about the same low level as in the postwar depression period, but farm prices and the cost of living were considerably higher than at that time.

Wholesale prices, which reached a peak about the middle of 1925, declined continuously throughout 1926 to a low point in the spring of 1927. Advances in the prices of agricultural commodities during the summer caused the general index to move up during the third quarter of the year and December wholesale prices averaged only 1 per cent lower than a year earlier. In the case of farm prices the advance during the second half of the year was very marked and in

December they averaged 8 per cent higher than at the end of 1926. All groups of commodities included in the general index of wholesale prices averaged lower in 1927 than in 1926, except hides and leather products, which advanced 8 per cent. Fuel and lighting showed the most marked decline, 14 per cent, while the miscellaneous group, which includes crude rubber and automobile tires, decreased 10 per cent.

The cost of living decreased about 2 per cent during 1927, declines appearing in all the groups included in the index. Retail food prices fell off the most, by 4 per cent, while the cost of housing and of fuel and lighting each declined about 3 per cent.

Transportation.

Railroad ton-mileage in 1927 was smaller than in 1926 but larger than in any other year. Total car loadings of commodities and ton mileage of revenue freight both decreased about 3 per cent, largely as a result of smaller movement of coal. Operating revenues of railroads were 3.8 per cent and operating expenditures only about 2 per cent less than in 1926, with the result that the net railway operating income fell off 12 per cent, although it continued to be higher than in most other recent years. The ratio of operating expenses to operating revenue, which declined from the excessive level of 94.3 per cent in 1920 to 73.2 per cent in 1926, advanced to 74.6 per cent. The efficiency of railway operation has been greatly improved in recent years and this was evidenced in 1927 by the rapid movement of traffic, which was almost entirely free from congestion and delay.

There was a further decrease in the tonnage of the American merchant marine in 1927, but it continued to be more than twice as large as before the war. The loss was confined almost entirely to the tonnage registered for foreign trade. The tonnage so registered is still about seven times as large as in 1914, though some of it continues to lie idle. Entrances of vessels engaged in foreign trade totaled more than 74,000,000 net tons in 1927, somewhat less than in 1926 but decidedly larger than in any other year.

Wholesale and Retail Trade.

The value of wholesale trade was about 4 per cent less in 1927 than in 1926, which was partly and perhaps entirely the result of the decline in commodity prices. Smaller sales were reported for all nine lines included in the Federal Reserve Board index, except men's clothing, shoes, and drugs. The largest declines were in sales of meats, dry goods, hardware, and groceries.

Those branches of retail trade for which information is available showed further expansion during 1927; sales of mail-order houses and chain stores continued to increase, while department store sales about equaled the record value of 1926. The total sales of reporting retail

chains were 17 per cent larger than in 1926 but about half of this gain was due to new stores opened during the year. Sales of mail-order houses were 14 per cent greater in 1927 than in the preceding year as a result of increased trade in the last half of the year which reflected improved conditions in agricultural regions. Department store sales were larger in the northeastern part of the United States, in the Great Lakes region, and on the Pacific Coast, but were smaller in most sections of the south and middle west.

Foreign Trade.

The export trade of the United States increased substantially in quantitative volume during 1927 and was 41 per cent larger than in 1922, while the quantity of merchandise imported reached about the same high level as in 1926. An outstanding feature of international trade in 1927 was the sharp decline in prices. Average prices for American exports were about 7 per cent lower than in the preceding year and there was almost the same decrease in the prices paid for imports.

Notwithstanding the lower prices exports were 1.2 per cent greater in value in 1927 than the year before, while imports decreased 5.6 per cent in value. The combined effect of these changes was an increase in the excess of merchandise exports over imports from $378,000,000 in 1926 to $681,000,000. The net import of gold was only $6,000,000 in 1927 as compared with $98,000,000 in the preceding year, while there was little change in the net silver exports.

Of the various invisible items which enter our international balance of payments, increases were shown in loans to foreign countries and in expenditures of American tourists abroad, on the one side of the account, and in the interest payments received on our foreign investments on the other side, while immigrant remittances were somewhat smaller than in 1926. The par value of new foreign loans during the year reached the enormous aggregate of $1,593,000,000.

The most important changes in the composition of our export trade were increases in shipments of crude foodstuffs and semimanufactured articles and decreases in exports of crude materials and manufactured foodstuffs. The decrease in shipments of crude materials was caused by the cessation of the abnormal demand for coal which resulted from the British coal stoppage in 1926, while a decrease in value of exports of manufactured foods was due to declines in both the quantity and the average unit value of exports of meats and animal oils. Exports of finished manufactures showed further expansion in quantity and even an increase of 1.2 per cent in value, owing chiefly to the increased foreign demand for American automobiles and machinery.

The most significant changes in the geographic distribution of the export trade were increases in the value of shipments to Canada and

Africa, a small decrease in exports to Latin America, and a decrease of 9 per cent in those to Oceania. The expansion of trade with Canada resulted from larger sales of automotive products, machinery, and grain. There were practically no changes in the total value of exports to Europe, as decreases in exports to the United Kingdom, France, and Italy were about offset by an increase of one-third in the shipments to Germany and smaller increases in exports to most of the other European countries. The value of exports to Latin America would have been the same in 1927 as in 1926, despite lower prices, but for a considerable decrease in shipments to the major market, Mexico, where the price decline of petroleum impaired buying power. The chief cause of the decrease in exports to Oceania was the decline in sales of automobiles to Australia and New Zealand, which, however, remained at a high level.

The reduction in the value of our import trade in 1927 resulted from a smaller value of imports of merchandise in the crude or semi-manufactured state, due chiefly to lower average prices paid, especially for rubber, silk, wool, and cotton. Imports of crude foodstuffs also declined owing to decreases in both the quantity and average price of our imports of coffee. A marked advance in the price of sugar, on the other hand, brought about a considerable increase in the value of imports of manufactured food. Imports from each of the continents declined in value in 1927. Europe replaced Asia as the leading supplier of our imports, owing to a material decline in the prices, and consequently in the total value, of rubber and silk purchased from the latter continent. Imports from South America were also considerably smaller in 1927, as a result of decreased purchases of copper, nitrate, wool, and a decline in the price of coffee.

Finance.

In 1927 there was a continued growth in the volume of nearly all kinds of financial transactions. Check payments increased by 11 per cent over 1926, as a result of the further expansion of stock-market operations, and a continuance of general business activity.

The combined assets of all American banks increased 5 per cent as compared with 1926. There was a particularly large growth in the volume of time deposits and a decided tendency on the part of banks to increase investments more rapidly than loans.

Some marked changes were shown by the Federal reserve bank statements. Bills and securities held by these banks increased by about one-fifth, while holdings of United States Government obligations doubled.

Money rates were at a low level during 1927 and showed a slight softening in the latter part of the year. All of the Federal reserve banks reduced their discount rates during the summer months from

4 per cent to 3½ per cent and the range of rates for brokers' collateral call loans was probably the narrowest of any year on record. The aggregate volume of issues of securities, as well as the value of foreign issues included in this total, were both the largest on record.

The stock market was especially active in 1927 and security prices advanced throughout the year. Both stocks and bonds reached new high levels and about one-half of the increased loans of banks took the form of brokers' collateral loans.

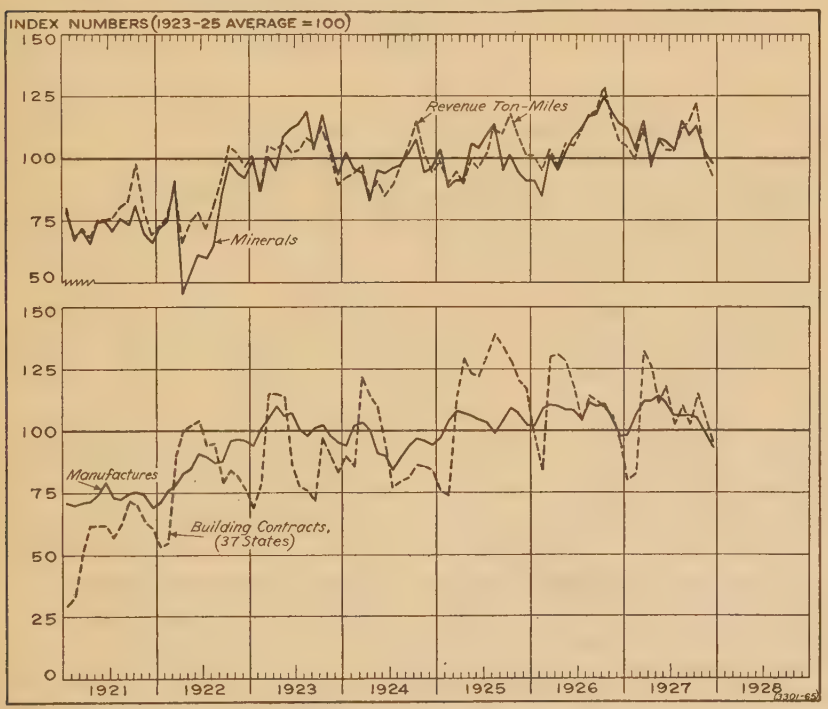
The receipts of the United States Government continued to be greatly in excess of expenditures and the surplus was used for retirement of the public debt. The total debt reduction in the fiscal year 1926–27 amounted to $1,133,000,000, which was larger than in any previous year except 1919–20.

COMMERCE YEARBOOK, 1928

PRODUCTION, EMPLOYMENT, AND DOMESTIC TRADE

SUMMARY.—The total production and trade of the United States reached practically the same record volume in 1927 as in 1926. Harvests were large and crop marketings exceeded those of any other year on record. Production of both minerals and manufactures was larger than in any other earlier year except

Chart I.—INDEXES OF MANUFACTURING PRODUCTION, MINERAL PRODUCTION, BUILDING CONTRACTS, AND RAILROAD TON-MILES



1926; mineral output equaled the record production for 1926, while manufacturing output showed only a slight decrease. Factory output reached a record volume in the spring of 1927, but declined considerably in the last half of the year. Production of forest products was smaller in 1927 than in any of the four preceding years, showing a decrease of about 2 per cent as compared with 1926.

Railroad freight ton-mileage was about 6 per cent less than in 1926, but this was largely because of the smaller movement of coal. Sales of wholesale concerns decreased about 4 per cent in 1927, partly as a result of a decline in commodity

prices. Retail business, on the other hand, showed further expansion; sales of mail-order houses and chain stores continued to increase, while department-store sales equaled their record volume of 1926. The increase in the total sales of reporting chains amounted to 17 per cent, as compared with 1926, but about half of this gain was a result of the opening of additional stores. Commercial failures were somewhat larger than in the immediately preceding years, while the number of bank suspensions was reduced by about one-third.

Indexes compiled by the Department of Labor show that both employment and pay rolls of manufacturing industries averaged 4 per cent lower in 1927 than in 1926. There was also a reduction in the number of workers employed by railroads. Average weekly earnings, however, showed very little change, and a further advance is reported in average union wage rates.

Table 1.—Indexes of Production and Sales

[Monthly average 1923–1925=100]

Branch	1921	1922	1923	1924	1925	1926	1927	Percent change, 1927 from 1926
DEPARTMENT OF COMMERCE PRODUCTION INDEXES								
Manufacturing (75 commodities)	73	86	101	95	104	107	105	−1.9
Raw materials, total	88	93	98	102	100	104	107	+2.9
Minerals (9 commodities)	73	75	105	97	99	107	107	0
Animal products, marketings (8 commodities)	85	92	101	101	98	99	101	+2.0
Crops, marketings (26 commodities)	102	102	92	107	101	106	113	+6.6
Forest products (13 commodities)	70	90	99	97	103	97	95	−2.1
FEDERAL RESERVE BOARD PRODUCTION INDEXES								
Agricultural	105	110	108	117	111	115	119	+3.5
Industrial production:								
Total (60 commodities)	67	85	101	95	104	108	106	−1.9
Manufacturing (52 commodities)	67	87	101	94	105	108	106	−1.9
Mining (8 commodities)	70	74	105	96	99	107	107	0
OTHER INDEXES								
Railroad ton-mileage	77	84	102	96	102	109	102	−6.4
Carloadings, all commodities	79	87	100	97	103	107	104	−2.8
Crops (production)	90	99	99	100	101	103	104	+1.0
Wholesale trade, value of sales	87	89	101	98	101	98	95	−3.1
Department stores, value of sales	87	88	98	99	103	106	106	0
Mail-order houses, value of sales	67	73	92	98	110	115	120	+4.3

RECENT MOVEMENTS IN MANUFACTURING PRODUCTION

General Index of Manufacturing Output.

The production of manufactured goods in the United States was 2 per cent less in 1927 than in 1926; but was higher than in any other year, according to the index of the Department of Commerce which measures the volume of manufacturing output (in quantity, not value). (Table 1.) This index has been revised to include 75 commodities. The Federal Reserve Board index, composed of 52 commodities with relatively greater weighting for the more sensitive articles than the Department of Commerce index, declined less than 2 per cent from 1926.

The net change in manufacturing production from 1926 to 1927 was the smallest of any year since the war, the increase of 3 per cent

from 1925 to 1926 being the smallest previous net change. Over a stretch of three years annual output of manufactured goods has thus varied less than 3 per cent, as contrasted with 6 per cent, the smallest net change between any two previous postwar years (from 1923 to 1924), and the maximum net change of 24 per cent from 1920 to 1921. The fluctuation between the maximum and minimum months in 1927 (Table 2) was larger than in 1925 or 1926 owing to the recession at the end of the year. If the monthly figures are reduced to daily averages, allowing for the differences in the number of working days in each month, the 1927 output shows a variation of 19 per cent between the high and low (or 16 per cent if December is excluded), while in 1926 the extreme fluctuation was 13 per cent and in 1925 it was 12 per cent on the adjusted basis. The extreme monthly fluctuation for the three years, 1925 through 1927, was only 19 per cent (or only 17 per cent if December, 1927, is excluded), while in 1924 the monthly high point was 19 per cent above the low mark. The allowance for number of working days is made by excluding Sundays and the two nationally-observed holidays—Fourth of July and Christmas. In Table 3 index numbers adjusted in this manner are compared with the unadjusted figures.

During the first month of 1927 manufacturing output continued on the same level as at the end of 1926, both the December and January indexes being 98 (based on the monthly average of the years 1923 to 1925 as 100). Production steadily increased in the next two months of 1927, the March index being the largest on record up to that time. April output averaged the same as March, while May production again advanced to a new peak and remained the highest on the adjusted basis. Operations in June showed a slight decline from May, and July a further decline from June, moving according to the usual seasonal trend. The monthly production from March through July made new high records for the respective months, but for the remainder of the year the figures for each month were below the corresponding months of 1926. The September index in 1927 was on the same level as July, whereas September production has usually in recent years been larger than either July or August. The October index was actually below that for September and November, and December showed further declines; the decline in the two latter months was at about the same rate as in the corresponding months of 1926. As a result of this recession at the end of the year, the December production was lower than that of December, 1925 or 1926.

Table 2.—Indexes of Production of the Branches of Industry by Months

NOTE.—The manufacturing index here given is adjusted according to the varying length of the month in working days. The industrial production index is adjusted for this and other seasonal factors. The other indexes are unadjusted.

[Monthly average 1923–1925=100]

Year and branch of industry	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Manufacturing (adjusted):												
1921	71	70	71	72	74	79	73	73	75	76	75	69
1922	71	77	78	84	85	91	90	87	88	96	97	96
1923	94	101	105	110	106	104	101	98	101	102	98	96
1924	94	102	103	100	91	90	84	89	94	97	96	94
1925	97	104	108	108	106	104	103	99	104	109	107	102
1926	102	109	111	111	109	109	104	111	111	111	104	98
1927	98	106	112	112	114	111	106	105	106	105	98	95
Minerals:												
1921	78	68	71	67	74	75	71	76	73	81	71	66
1922	72	75	91	46	54	61	60	66	86	98	94	92
1923	99	87	100	95	110	112	114	119	103	117	105	93
1924	102	96	95	83	95	94	97	97	102	108	94	96
1925	103	88	91	91	105	104	109	114	96	102	94	91
1926	91	85	101	95	103	109	112	117	117	125	120	115
1927	112	104	115	97	108	108	103	115	110	114	103	99
Forest products:												
1921	50	55	66	69	76	76	71	76	73	76	79	74
1922	74	70	82	84	100	105	95	103	97	97	96	81
1923	88	79	98	99	111	110	100	111	101	108	99	87
1924	91	93	96	106	108	98	91	102	98	101	94	89
1925	95	91	103	107	109	110	103	109	110	112	99	97
1926	89	94	103	101	108	105	98	96	99	98	93	87
1927	80	84	92	94	103	102	94	103	102	98	96	87
Animal products (marketings):												
1921	82	75	86	89	89	88	79	84	82	87	85	90
1922	84	76	89	93	104	98	92	88	86	97	98	103
1923	98	83	98	97	110	103	111	96	93	105	106	112
1924	109	91	93	103	107	101	101	93	95	97	108	120
1925	38	88	97	99	99	104	96	93	91	100	103	107
1926	93	82	98	96	102	105	99	96	96	101	109	109
1927	96	85	102	103	116	107	98	98	94	102	108	106
Crops (marketings):												
1921	109	87	85	60	76	81	93	115	139	160	111	107
1922	93	88	71	50	78	69	73	106	151	177	146	129
1923	104	66	68	56	50	49	49	103	131	167	143	121
1924	84	79	65	49	55	51	66	117	175	224	177	143
1925	108	73	68	45	50	50	63	96	174	178	158	149
1926	99	72	63	52	52	57	94	104	156	210	181	135
1927	110	93	85	61	63	63	76	124	186	216	157	116
Industrial production, total (adjusted): [1]												
1921	67	66	64	64	66	65	65	67	67	71	71	70
1922	73	76	80	77	81	86	86	84	88	94	97	100
1923	100	100	103	107	107	105	103	102	100	99	97	96
1924	100	102	100	95	89	85	83	89	94	94	97	101
1925	105	105	104	103	103	102	103	103	102	105	106	108
1926	106	107	107	107	106	107	107	111	112	111	108	105
1927	107	109	111	108	111	108	106	107	105	103	99	99

[1] Includes manufacturiug and mining production.

Sources: Department of Commerce, Survey of Current Business; Federal Reserve Board for Industrial Production.

Table 3.—Index of Production of Manufacturing Industry, Unadjusted and Adjusted for Differences in Working Time During the Month

[Monthly average 1923-1925=100]

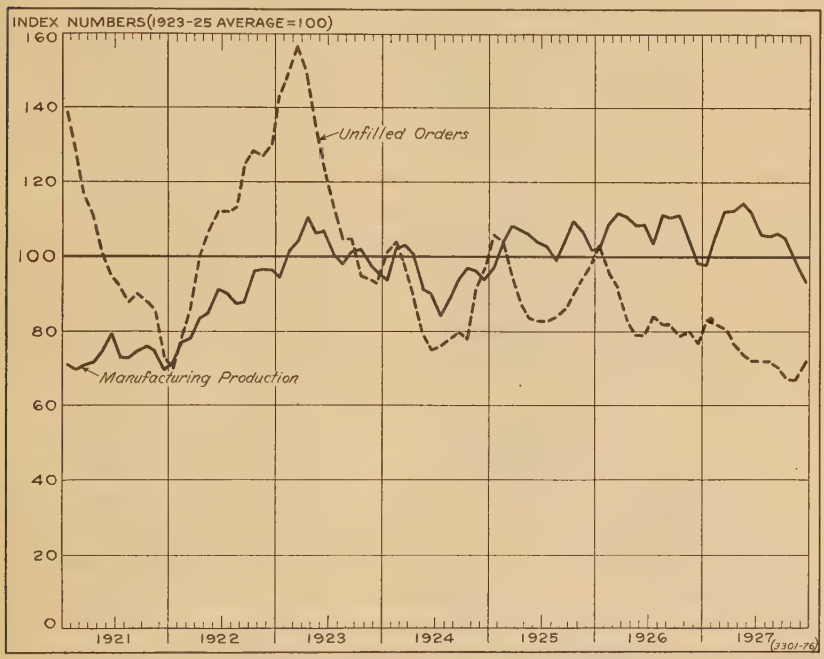
Month	1923		1924		1925		1926		1927	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
January	98	94	98	94	101	97	102	102	98	98
February	94	101	98	102	97	104	101	109	98	106
March	109	105	103	103	108	108	116	111	117	112
April	106	110	100	100	108	108	111	111	112	112
May	110	106	95	91	106	106	109	109	114	114
June	108	108	86	90	104	104	109	109	111	111
July	97	101	84	84	103	103	104	104	102	106
August	102	98	89	89	99	99	111	111	110	105
September	97	101	94	94	104	104	111	111	106	106
October	106	102	101	97	114	109	111	111	105	105
November	98	98	93	96	103	107	104	104	98	98
December	92	96	94	94	102	102	98	98	95	95

Source: Department of Commerce, Survey of Current Business.

The index of unfilled orders for manufactures (Table 6) declined steadily throughout the year until December. This was a continuation of the trend shown during 1926—which resulted from "hand-to-mouth" buying by consumers. The index turned upward in December, 1927, while in 1926 it continued to decline in that month, but there was no seasonal rise in the fall such as occurred in 1924 and 1925. The low point in October and November, 1927, was 67

Chart II.—INDEXES OF MANUFACTURING PRODUCTION, AND UNFILLED ORDERS

NOTE.—The manufacturing index has been adjusted for seasonal variations.



(based on average unfilled orders for 1923 to 1925 as 100), which was a new low record for the index. At the end of 1927 the index of unfilled orders was 6 per cent less than in the corresponding month a year earlier, whereas the net decline in 1926 amounted to 21 per cent.

Manufactures by Groups.

Although the combined index of manufacturing production showed a decrease from 1926 (Table 1), 7 out of the 13 groups into which the manufactured goods are divided showed increases over 1926, 5 declined and 1 was unchanged. (Table 4.) The greatest relative gains occurred in the textile and leather groups and amounted to 9 and 6 per cent, respectively. Tobacco products and rubber products each

increased 4 per cent over 1926, while the increases in paper and printing, stone, clay, and glass products, and chemicals and oils were each about 2 per cent. Foodstuffs remained unchanged; the miscellaneous group declined 1 per cent and nonferrous metals 2 per cent. A decline of 17 per cent was shown by the vehicle industry and iron and steel and lumber each decreased 7 per cent. All commodities which showed increased production in 1927 made new high records with the exception of foodstuffs, which equaled its record mark of 1926, and leather, the production of which was larger in 1923 and 1920. Of the groups in which production declined nonferrous metals and miscellaneous had a higher output in 1927 than in any year except 1926. The iron and steel and lumber groups had lower outputs than in 1923, 1925, or 1926, while vehicle production which includes shipbuilding was smaller than in any year since 1922.

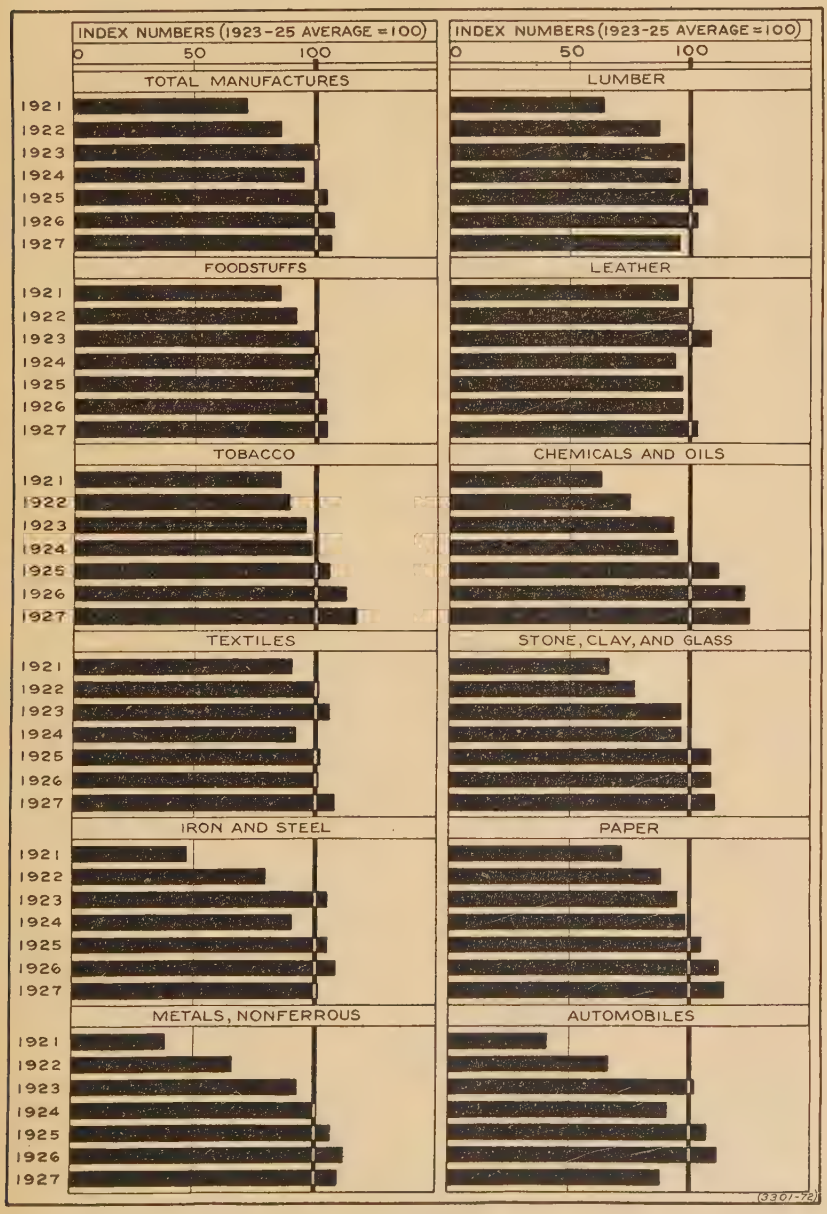
Taking the eight-year span from the postwar boom year of 1920 through 1927, every group except leather products and vehicles had a larger production in the latter year than in the former. (No data for rubber products were available in 1920.) Nonferrous metal production in 1927 was almost three times the low output of 1921 while the iron and steel, rubber products, and chemical and oil groups approximately doubled their 1921 production. Foodstuffs, textiles, leather, and tobacco, which were little affected in the decline from 1920 to 1921, also have had the smallest increases since that date. If comparison is made with 1923, when recovery from the 1921 depression was completed, 1927 output was larger for all groups except iron and steel, lumber, and leather. Increases of about one-third are shown by the rubber product and chemical groups, while increases of about 20 per cent occurred in the tobacco products, nonferrous metals, paper and printing, and miscellaneous groups.

The maximum production month in 1927 varied considerably for each group. The group indexes are unadjusted for the varying number of working days owing to differences in practice between industries as to holiday and Sunday observance. January was the peak month for nonferrous metals; March for textiles and iron and steel; April for rubber, paper and printing, vehicles, and miscellaneous; July for foodstuffs (a seasonal condition); August for lumber, leather, and stone, clay, and glass products and tobacco; and October for chemicals and oils. It is interesting to note that May, the peak month for all time in the total index on the adjusted basis, was not the peak for any group, nor would it have been if the groups had been unadjusted. On the other hand, August, in which high production is not usually encountered, showed production at a peak for more industries than any other month.

New monthly peaks in output since 1919, the period in which monthly data are available, were made in 1927 by seven groups—

chemicals and oils, at 138 relative to the 1923–1925 monthly average as 100 (exceeding fractionally the 1926 high month); rubber at 136;

Chart III.—INDEXES OF MANUFACTURING PRODUCTION, BY GROUPS



foodstuffs at 133; stone, clay, and glass at 132; tobacco products at 131; iron and steel at 124; and textiles at 123.

Chart IV.—MONTHLY INDEXES OF MANUFACTURING PRODUCTION, BY GROUPS

NOTE.—All scales are broken; therefore do not show zero line. The effect is to exaggerate the magnitude of the fluctuations.

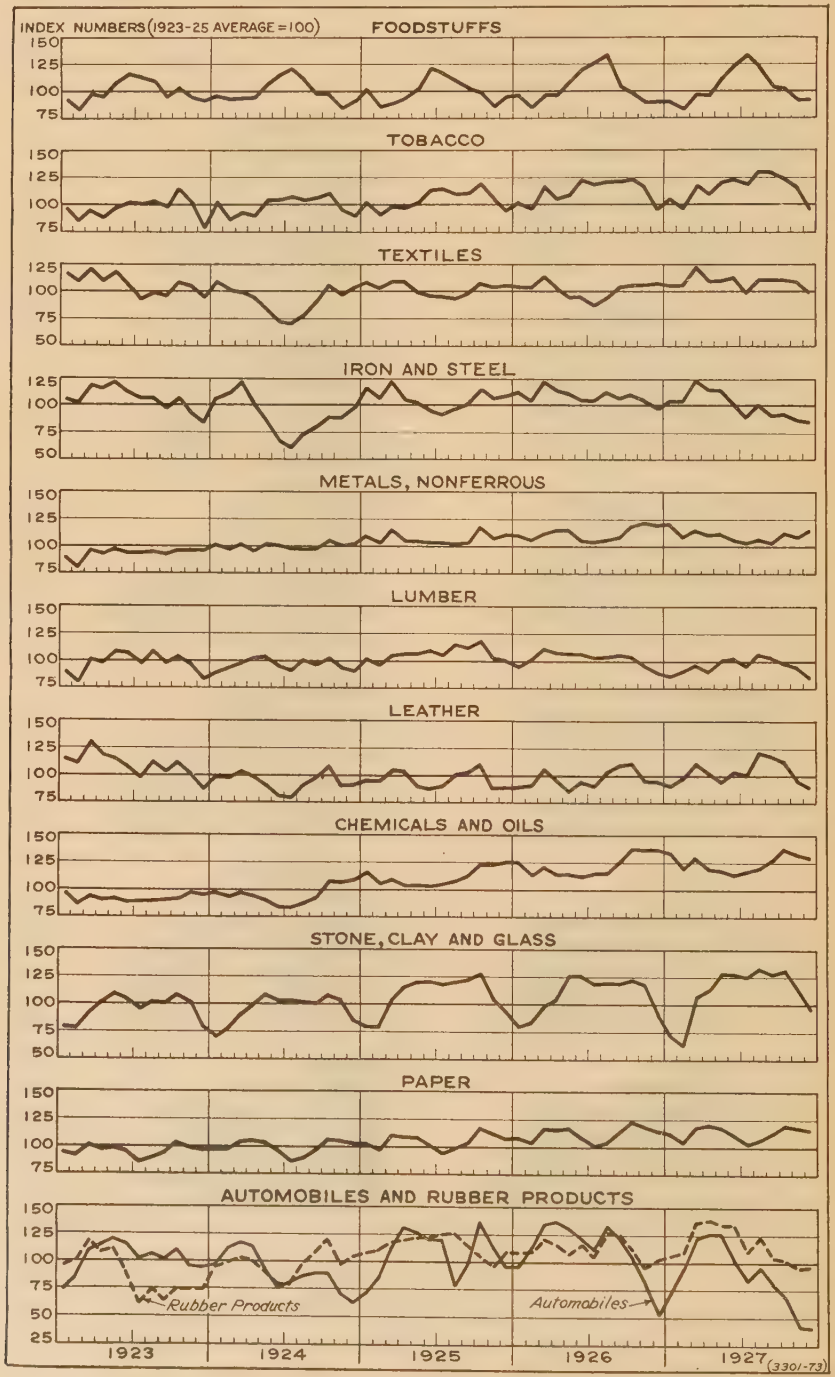


Table 4.—Manufacturing Production—Indexes for Groups of Industries

NOTE.—Monthly average 1923-1925=100. These index numbers are not adjusted for length of month or seasonal variations.

Period	Food-stuffs	Tex-tiles	Iron and steel	Lum-ber	Leath-er	Paper and print-ing	Chem-icals and oils	Stone, clay, and glass prod-ucts	Me-tals, non-fer-rous	To-bacco	Rub-ber prod-ucts	Vehi-cles [1]	Mis-cel-lane-ous
1920	82	94	96	73	108	81	75	67	87	87	------	161	102
1921	84	90	47	64	95	72	63	66	38	85	55	90	68
1922	92	101	80	87	101	88	75	77	66	89	79	72	90
1923	100	106	105	98	109	95	93	96	93	96	87	111	97
1924	101	92	90	96	94	99	95	96	100	99	98	89	95
1925	100	102	105	107	97	105	112	109	107	105	115	101	108
1926	104	101	109	103	97	112	123	109	112	112	112	106	116
1927	104	110	101	96	103	114	125	111	110	116	116	88	115
Per cent change 1927 from 1926	0.0	+8.9	−7.3	−6.8	+6.2	+1.8	+1.6	+1.8	−1.8	+3.6	+3.6	−17.0	−0.9
1924													
January–March	95	103	113	93	100	100	97	80	100	93	100	98	97
April–June	106	83	84	100	91	102	90	103	99	99	91	96	90
July–September	110	79	72	96	89	91	88	101	98	106	95	87	93
October–December	91	102	91	96	97	105	108	99	102	99	108	74	100
1925													
January–March	92	107	113	101	99	104	111	88	109	97	112	90	95
April–June	106	101	100	108	94	106	104	118	105	104	121	119	111
July–September	109	95	96	115	98	99	108	120	102	112	122	93	116
October–December	93	105	110	107	96	113	124	109	112	106	104	101	111
1926													
January	96	104	113	96	88	109	125	80	111	101	108	85	90
February	85	103	104	101	91	104	115	84	106	96	110	103	103
March	97	113	124	112	106	117	121	99	112	116	121	133	125
April	96	103	114	108	96	116	115	105	115	105	117	130	124
May	109	94	111	107	85	117	115	126	115	108	108	121	124
June	121	95	105	107	95	108	112	126	105	123	116	119	123
July	126	87	104	103	91	101	115	118	104	117	105	107	111
August	133	93	113	104	104	105	116	120	107	120	127	124	116
September	105	103	108	106	110	114	126	119	109	121	125	110	132
October	98	106	111	104	111	124	138	122	118	124	112	96	133
November	89	106	105	96	96	119	137	118	123	115	96	78	110
December	90	107	98	90	95	115	137	91	119	95	102	64	103
1927													
January	90	106	103	87	92	113	134	73	121	105	106	65	82
February	83	106	103	90	99	105	120	63	109	97	108	87	95
March	97	123	124	97	111	119	130	107	114	116	134	121	118
April	96	109	115	92	104	121	120	115	111	110	136	125	131
May	112	110	114	101	94	119	118	128	112	120	133	124	120
June	124	112	100	103	103	111	114	127	107	124	133	111	120
July	133	99	89	96	100	103	117	125	103	118	110	83	101
August	123	110	100	107	122	107	120	132	107	131	123	93	113
September	104	110	91	103	118	113	127	127	102	130	106	85	127
October	101	110	92	99	113	120	138	131	112	129	105	65	129
November	92	109	88	94	95	119	133	115	109	122	99	50	124
December	92	111	86	85	89	116	130	96	115	94	99	53	116

[1] Includes automobiles, locomotives, freight cars, and shipbuilding.

Source: Department of Commerce, Survey of Current Business.

Three groups—paper, nonferrous metals, and miscellaneous—made their highest monthly outputs in 1926, lumber reached its peak in 1925, while for leather and vehicles the peaks made in 1920 have not been exceeded since, the 1920 peak for vehicles was due largely to the completion of ships ordered during the war period.

Five of the groups had their minimum output for 1927 in December—rubber, iron and steel, lumber, leather, and tobacco products—

while vehicles made its low mark in November at a level only slightly below its December output. For the other groups the minimum production month was either in the middle of the year—chemicals and oils in June and paper and printing and nonferrous metals in July—or at the beginning of the year, the miscellaneous group making its low mark in January and foodstuffs and stone, clay, and glass products in February. The minimum month of 1927 had a lower production than the minimum month of 1926 for 8 out of the 13 groups.

Individual Manufactured Articles.

The production of the principal individual commodities can be compared in Table 5, in which the production figures of these commodities are shown separately or combined with other related commodities. Thus, 64 different items are presented. Of these, 33 increased in production over 1926, 28 declined, and 3 remained unchanged. Shipbuilding showed the largest increase, 56 per cent; turpentine and rosin, with the next greatest gain, rose 29 per cent, followed by common brick and pyroxylin coated textiles, which rose 26 and 23 per cent, respectively. Gains of 10 to 15 per cent were made by four commodities, while all the other gains—26 in number—were less than 10 per cent. The largest declines from 1926 were all in the vehicle group, locomotives declining 39 per cent, railroad cars 32 per cent, and automobiles 20 per cent. Five commodities declined from 10 to 14 per cent and 20 declined less than 10 per cent. The textile group showed the most consistent gains over 1926 among the individual commodities, as eight items increased.

New high annual records (at least in the postwar period for which figures are available) were made in 1927 by the following commodities, given in the order of their increase over the base period (1923 to 1925, monthly average): Gasoline, shipbuilding, pyroxylin-coated textiles, cottonseed oil, cigarettes, common brick, ice cream, turpentine and rosin, newspapers, gas and fuel oils, cotton consumption, butter, lead, glucose and starch, tires, cement, buttons, books, copper, condensed milk, face brick, prepared roofing, wheat flour, and job printing, while sales books equaled the previous record made in 1926. Shipbuilding, which showed the greatest increase in production relative to the base period, had a much smaller output than in 1921. Compared with the depression year 1921, production of copper in 1927 showed a gain of around 250 per cent, and the output of the following commodities more than doubled: Zinc, gasoline, ethyl alcohol, steel ingots, flooring, pig iron, tires, and coke. It will be noticed that 7 of the 11 commodities showing the greatest gains over 1921 were either metals or fuels. Decreases in output from 1921 to 1927 occurred in cigars, cotton finishing, sole leather, locomotives, and shipbuilding, the latter being almost 75 per cent smaller.

Chart V.—INDEXES OF PRODUCTION OF PRINCIPAL INDIVIDUAL MANUFACTURED ARTICLES

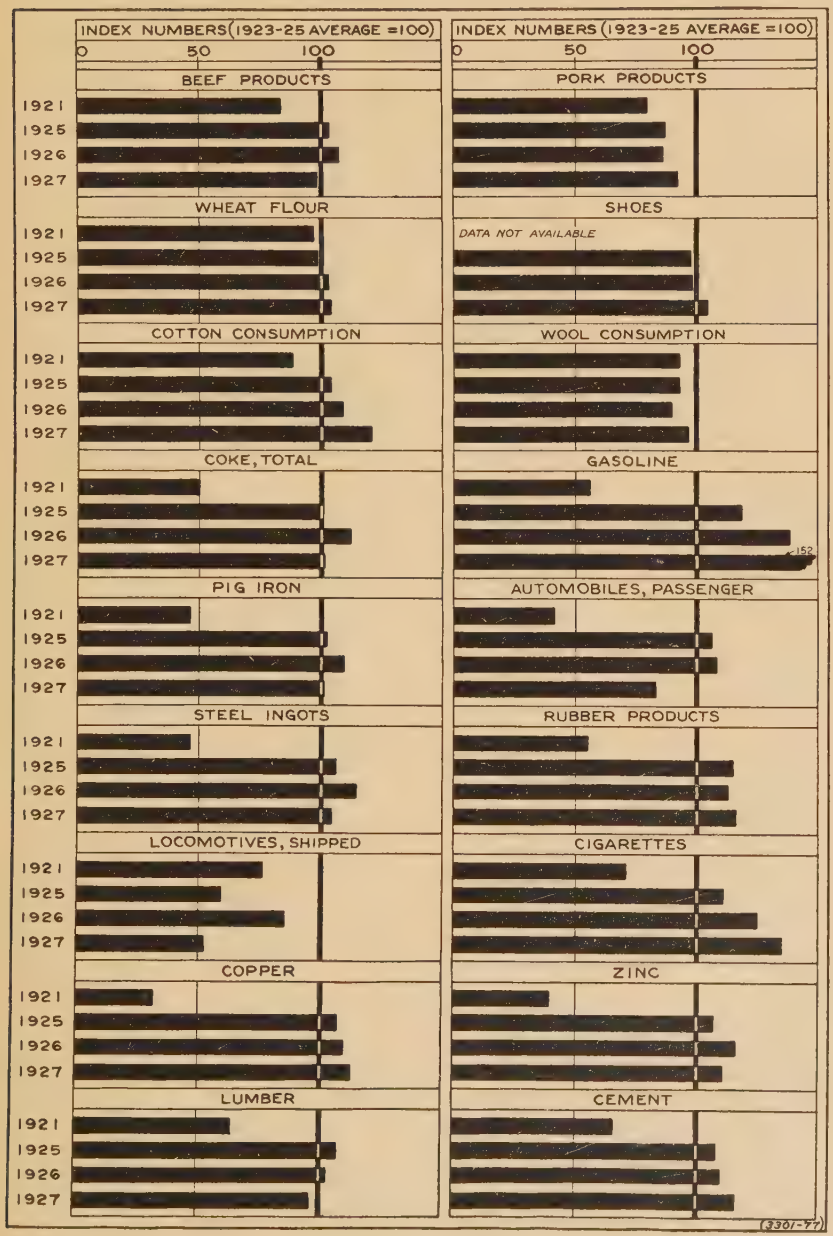


Table 5.—Indexes of Production of Principal Individual Manufactured Commodities

[Monthly average 1923–1925=100]

Commodity	Year							December		Maximum month	Minimum month
	192	1922	1923	1924	1925	1926	1927	1926	1927	1927	1927
Total commodities	**73**	**86**	**101**	**95**	**104**	**107**	**108**	**98**	**93**	**117**	**93**
Meat	83	91	105	102	94	96	96	107	106	108	81
Wheat flour	97	101	99	103	99	103	104	102	106	124	92
Sugar meltings	77	112	90	99	111	112	106	71	63	144	63
Ice cream	77	84	95	94	111	120	129	49	73	268	52
Butter [1]	80	87	95	103	103	110	120	82	80	212	78
Cheese [1]	80	87	94	99	106	103	99	56	69	156	58
Condensed milk [1]	84	82	102	98	101	108	109	78	68	177	68
Glucose and starch	83	95	94	107	100	108	118	87	107	146	100
Cotton (consumption)	88	99	106	90	104	109	121	118	106	135	106
Wool (consumption)	93	115	113	95	93	90	97	101	88	115	84
Carpets and rugs	70	105	112	90	98	86	88	89	93	93	76
Dyeing and finishing cotton	102	111	113	93	94	97	101	102	93	129	86
Silk (activity)	------	------	95	92	113	109	110	111	117	117	104
Hosiery	------	------	105	92	104	96	102	95	92	114	85
Knit underwear	75	93	104	93	103	92	95	83	87	107	79
Pyroxylin-coated textiles	------	------	105	93	103	122	150	127	148	184	128
Pig iron	46	75	112	87	102	109	101	103	90	117	89
Steel ingots	46	83	105	89	106	114	105	100	92	131	91
Gray iron castings	42	63	106	98	96	91	79	94	57	105	56
Malleable castings	------	------	114	86	101	97	86	82	78	108	66
Enamelware	50	77	93	99	107	94	87	64	58	104	58
Lumber	70	90	100	96	104	98	93	84	83	102	83
Flooring	46	75	91	95	114	118	103	104	87	115	87
Turpentine and rosin	77	88	104	100	96	99	128	125	118	209	25
Hides	80	91	96	101	103	107	100	112	96	113	88
Upper leather	85	107	114	94	93	102	98	110	105	105	87
Sole leather	112	110	117	91	93	85	98	94	93	105	87
Shoes	------	98	107	95	98	99	105	93	86	128	86
Paper	66	89	95	99	106	111	107	102	102	116	99
Wood pulp	69	86	94	103	104	112	103	109	102	119	91
Shipping containers	------	72	92	97	111	128	125	114	108	135	108
Newspaper publishing	72	83	92	100	108	122	126	133	133	136	105
Job printing	------	98	100	99	101	100	102	102	105	109	90
Book publishing	91	95	99	96	105	107	113	100	113	131	93
Sales books	72	87	99	97	103	104	104	109	112	120	77
Coke	50	73	113	87	100	112	101	106	95	113	92
Gasoline	56	68	83	98	119	138	152	152	157	159	138
Kerosene	79	94	96	103	102	106	96	111	100	105	88
Lubricating oil	74	83	93	97	110	115	112	115	119	119	100
Gas and fuel oil	71	79	89	99	113	113	121	124	122	126	112
Cottonseed oil	105	77	80	95	125	145	149	274	190	270	22
Explosives	------	88	105	97	98	104	98	104	85	112	85
Ethyl alcohol	46	62	85	92	123	123	110	118	148	148	78
Common brick	------	------	94	92	114	105	132	107	121	170	67
Face brick	------	85	100	96	105	104	107	88	90	130	70
Paving brick	------	------	108	90	102	83	91	51	94	129	43
Portland cement	66	76	92	100	108	110	116	86	97	147	59
Plate glass	------	------	90	92	118	130	112	89	90	141	90
Illuminating glassware	------	------	115	89	97	91	83	111	67	109	62
Copper	32	63	93	100	107	110	108	117	115	120	100
Zinc	39	68	96	97	107	116	111	124	114	124	103
Lead	61	76	88	102	111	116	119	125	119	126	111
Tires	55	79	87	98	115	113	116	102	97	138	96
Heels, rubber	------	------	95	97	108	96	104	100	120	132	80
Manufactured tobacco and snuff	94	102	100	100	100	100	96	82	78	103	78
Cigars	101	103	104	99	97	98	98	83	70	123	70
Cigarettes	71	75	90	99	111	125	135	107	115	156	111
Railroad cars	42	57	144	81	76	80	54	33	32	73	32
Locomotives	76	69	165	76	59	85	52	108	42	80	30
Shipbuilding	586	143	122	89	89	96	152	184	182	284	32
Automobiles	41	66	102	91	107	111	88	52	42	126	42
Washing machines	54	75	92	94	114	133	122	128	109	147	104
Prepared roofing	82	96	96	102	103	100	106	80	127	127	53
Buttons	------	112	112	81	107	114	116	103	109	131	90

[1] Partly estimated in 1927.

Source: Department of Commerce, Survey of Current Business.

Unfilled Orders for Manufactured Goods.

The new index of unfilled orders, based on the average unfilled orders in the years 1923 to 1925 as 100, is shown by groups in Table 6. The downward trend of this index throughout 1927 was followed in each of the groups, though the iron and steel group, with a large increase in December, showed an increase above December, 1926. Average unfilled orders during 1927 were higher than in 1926 for the paper and textile groups, while lumber showed the greatest relative decline, over 15 per cent. For the brick and glass and lumber groups the average unfilled orders in 1927 were the lowest since 1921, transportation equipment had the lowest unfilled orders since 1925, and iron and steel the lowest of any year for which the monthly index has been computed.

Table 6.—Indexes of Unfilled Orders for Certain Commodities

[Monthly average 1923–1925=100 [1]]

Period	General average weighted	Steel, total United States Steel Corporation	Steel, sheet (independent concerns)	Locomotives	Flooring (oak and maple)	Enamel sanitary ware	Knit underwear	Pyroxylin coated textiles	Hosiery
1921 (monthly average)	101	112	52	42	33	24	60	-------	-------
1922 (monthly average)	108	118	77	103	83	75	97	-------	-------
1923 (monthly average)	122	126	100	189	111	161	123	131	114
1924 (monthly average)	87	84	82	58	92	90	80	81	82
1925 (monthly average)	91	91	118	54	97	49	97	88	105
1926 (monthly average)	85	82	118	67	80	32	71	105	86
1927 (monthly average)	74	71	100	38	71	21	77	139	85
1924									
March	97	100	94	64	108	148	100	103	86
June	75	68	55	63	71	88	65	56	66
September	80	73	61	47	85	58	46	72	71
December	97	101	147	51	103	48	93	75	95
1925									
March	95	102	122	53	91	55	112	77	110
June	83	78	98	47	93	50	95	89	118
September	86	78	111	45	98	51	80	96	97
December	98	105	151	82	110	38	89	87	88
1926									
January	103	102	135	75	101	39	97	85	103
February	96	97	116	66	94	40	96	107	90
March	92	92	119	90	89	41	90	88	92
April	83	81	105	82	82	41	81	87	91
May	79	76	93	84	79	38	76	106	88
June	79	73	94	77	80	35	78	122	88
July	84	75	116	64	75	32	68	113	88
August	82	74	116	61	83	30	63	111	82
September	82	75	163	57	76	27	54	107	79
October	79	77	129	45	69	21	46	84	80
November	80	80	111	60	62	19	47	126	82
December	77	83	118	46	68	24	51	130	72
1927									
January	83	80	117	48	74	23	68	128	78
February	82	75	114	47	81	22	78	176	80
March	81	74	114	45	89	22	85	143	78
April	77	72	109	39	98	20	83	155	82
May	74	64	98	50	102	23	84	143	87
June	72	64	89	46	78	21	85	138	90
July	72	66	78	46	61	23	80	125	86
August	72	67	70	42	59	22	82	123	85
September	70	66	78	31	54	22	80	125	91
October	67	70	68	21	48	18	71	125	92
November	67	72	97	17	50	17	64	138	88
December	72	83	166	27	57	19	62	154	77

[1] Merchant iron is also included in the general average index, but data are not available for publication separately.

Source: Department of Commerce, Survey of Current Business.

Except for iron and steel and transportation equipment, December was the low point for unfilled orders in 1927 for each group, iron and steel making its low mark in June and transportation equipment in November. The decline in unfilled orders in the last few years is not a sign of decreased activity of business but of improved transportation and better equipment of factories, making possible prompt filling of orders.

PROGRESS OF PRODUCTION AND ADVANCE IN EFFICIENCY

Changes in the efficiency of industry can only be calculated with reasonable accuracy from the returns of the biennial Census of Manufactures. The latest census year for which statistics are available at the time of writing is 1925 and consequently it is impossible to include in the following study the developments of the two latest years. However, a comparison of indexes of production and employment indicate that the advance in per capita production which marked the period from 1919 to 1925 continued throughout 1926 and 1927.

The marked increase in production and general volume of business as compared with 1919, disclosed in the statistics already presented, does not reflect an upward swing of the business cycle, since 1919 was itself a very active year. To some extent it does indicate the resumption of normal productive efficiency after the dislocation caused by the war. For the most part, however, it marks a definite attainment of a higher level of production and consequently of national well being. This is clearly shown from data as to the longer swing of production in the United States. Over a long period of time there has been a steady advance in the efficiency of American industry. The pace of this progress has been accelerated during recent years as the result of the cumulation of forces previously at work.

Increase in Production Since 1870.

Statistics of value of output are unsatisfactory as a measure of changes in production over a long period because of the marked variations in the buying power of money. A rough approximation of the true movement, however, may be gained by comparing value statistics with the general wholesale price index.

The present population of the United States is somewhat more than three times greater than in 1870. The production of agricultural products has fully kept pace with this increase in population, as is evident from the fact that exports have increased at approximately the same rate as the number of inhabitants. This has been done, however, with a relatively small increase in the number of persons engaged in agriculture. Approximately 7,000,000 persons were so employed in 1870 as compared with 10,500,000 at the present time.

The increasing efficiency in production of the farms has made it possible to set free very large numbers to engage in the more elabo-

rative industries and in commerce. Thus, even though the census of manufactures formerly included construction and hand trades, which are now excluded, the number of workers in factories at present is more than four times greater than in 1870. The production per worker in factories has meantime increased greatly. The added use of machinery is reflected in the fact that the horsepower of prime movers employed in factories is more than 15 times greater than in 1870. The value added to materials by manufacture is nearly 20 times greater than at that time, while the index of wholesale prices is less than 20 per cent higher, indicating an increase of probably fifteenfold or more in the quantitative output.

Table 7.—Growth of Manufacturing Industry, 1869–1925

NOTE.—Figures for the censuses prior to 1899 include hand and neighborhood industries excluded thereafter. Other changes in the basis for inclusion in the census affect slightly the comparability of the returns for 1919 and 1925 with those for previous years.

Year	Wage-earners (average number)	Horsepower of prime-movers [1]	Value added to materials	Wholesale price index
1869	2,054,000	2,346,000	$1,395,000,000	135
1879	2,733,000	3,411,000	1,973,000,000	85
1889	4,252,000	5,939,000	4,210,000,000	83
1899	4,713,000	10,098,000	4,831,000,000	75
1909	6,615,000	18,675,000	8,529,000,000	97
1919 [2]	8,990,000	29,298,000	24,748,000,000	206
1925 [2]	8,384,000	35,773,000	26,778,000,000	159

[1] Figures for 1919 and 1925 are not strictly comparable with earlier years due to the exclusion in these two years of purchased power other than electric.

[2] Figures exclude data for the "Coffee and spice, roasting and grinding" industry.

Sources: Bureau of the Census, Department of Commerce, and Bureau of Labor Statistics, Department of Labor.

There has likewise been an enormous increase in the output of mines. The value of mineral products, according to the reports of the Geological Survey, was more than fifteen times greater in 1925 than in 1880, the general wholesale price index having meantime increased about 60 per cent.[1]

Equally marked has been the increase in the volume of railway traffic which reflects both the changes in volume of production of commodities and in the distances hauled. The number of ton-miles of revenue freight carried during 1925 was about thirteen times greater than in 1880 and the number of passenger miles about six and one-half times greater.

Even were there no statistics of production the census returns as to the occupations of the people would furnish clear indication of increase in output and of efficiency in industry.[2]

[1] Geological Survey reports include some partly manufactured mineral products and are not directly comparable with the census returns of the mining industry proper, but down to 1919 (the date of the last mining census) the rate of increase shown by the two sets of figures was practically identical.

[2] Owing to changes in the grouping of occupations according to great classes, in the definition of certain individual occupations, and in instructions to enumerators (especially as to reporting women and children) the census statistics as originally published require regrouping and also certain adjustments which must be made by estimate. The margin of possible error involved in these estimates is not sufficient to obscure the general nature of the shift which has taken place.

Table 8.—Shift in Occupations, 1880–1920 (Adjusted Figures)

Occupation	Number			Per cent		
	1880	1900	1920	1880	1900	1920
Total	17, 392, 000	29, 073, 000	41, 854, 000	100. 0	100. 0	100. 0
Agriculture, lumbering, and fishing	8, 596, 000	10, 889, 000	11, 393, 000	49. 4	37. 5	27. 2
Manufacturing, mechanical pursuits, and mining	4, 449, 000	7, 451, 000	13, 809, 000	25. 6	29. 1	33. 0
Trade, transportation, and clerical work	2, 122, 000	5, 444, 000	10, 383, 000	12. 2	18. 7	24. 8
Professional service	603, 000	1, 213, 000	2, 112, 000	3. 5	4. 2	5. 0
Domestic and personal service	1, 622, 000	3, 076, 000	4, 157, 000	9. 3	10. 6	9. 9

Source: Bureau of the Census; adjustments by Division of Statistical Research, Bureau of Foreign and Domestic Commerce.

In 1880 nearly half of the entire working population was engaged in agriculture, forestry, and fisheries (the two latter groups accounting for only a small fraction). In 1920 the proportion had fallen to 27 per cent and the continued decrease since that time has probably brought it down to one-fourth. Every other major group of occupations has gained relatively as compared with agriculture. The proportion for manufacturing, mechanical pursuits, and mining rose from 25½ per cent in 1880 to 33 per cent in 1920. A still greater proportionate gain appears in the group which includes trade, transportation, and clerical services. The increasing efficiency in the production of commodities on the farms and in mines and factories has made it possible to set free larger numbers to engage in commerce, while in turn the greater multiplicity and elaboration of commodities has called for more complex methods of marketing. Some of the industries which have largely increased their sales and service organizations in recent years are automotive products, radio, and electric household appliances.

Advancing efficiency of production has also made possible an increase in the relative number engaged in professional pursuits and in personal services. The gain in the latter field has not been in household servants; the proportion of these is decidedly smaller than half a century ago. It has been rather in persons working in hotels, restaurants, laundries, hairdressing establishments, and other activities outside the home.

Quantitative Increase in Production Since 1899.

Calculations as to the quantitative increase in the products of agriculture, mining, and manufactures and in the volume of railway traffic from 1899 to 1925 are summarized in Table 9. There are no long-time data as to construction, a field in which the increase during recent years has been exceptionally rapid. Still less possible is it to measure the increase in the services (other than rail transport) which do not incorporate themselves in tangible goods.

The data in the table are in part estimates and there may be a margin of error of several per cent in some of the items. The broad movement is, however, substantially as shown. The percentage of increase given for the output of factories is probably an understatement. The quantitative figures from which the general average is computed are necessarily confined largely to commodities of simple type. Highly elaborated commodities in many instances can not be reported at all in terms of quantity and in many other cases the quantities are not comparable from census to census on account of differences of quality, style, shape, and size. In a progressing country increase in output is in all probability most marked in the unstandardized articles. Moreover the quantitative increase in articles not themselves comparable quantitatively can not be satisfactorily estimated by adjusting the statistics of their value by price indexes. Price statistics of articles themselves are either not available or not comparable. It is not to be expected that the movement of their prices should be parallel with that of standardized commodities, since a large proportion of them are newly developed articles in the production of which improvements take place with exceptional rapidity, while the exceptional increase in output likewise tends to reduce cost of production.

Table 9.—General Indexes of Production and Workers, 1925 in Relation to 1899

Industry	Workers (thousands)		Index 1925 (1899=100)			Value of output (millions of dollars)	
	1899	1925	Workers	Quantitative output	Output per worker	1899	1925
Agriculture	10,500	10,500	100	145	145	3,500	12,400
Mining	600	1,065	177	480	271	600	4,300
Manufactures	5,200	9,773	188	278	148	4,830	26,778
Transportation (railway)	929	1,846	199	293	148	1,300	5,620
Total or average	17,229	23,184	135	[1] 247	[2] 183	10,230	49,098

[1] Computed by giving the above percentages weights according to the relative importance of the several branches in 1899, as determined by value of product.

[2] Obtained by dividing the average index of increase in output (247) by the actual ratio of total workers in 1925 to the total in 1899 (135). The figure exceeds the weighted average of the indexes of output per worker in the several branches, because the increase in number of workers between 1899 and 1925 was confined to branches in which the average value of output per worker is greater than it is in agriculture.

The combined output of agricultural, mineral, and manufactured commodities, and of railroad transportation increased nearly two and one-half times between 1899 and 1925. Population meantime had increased 54 per cent, so that, per capita of the total population, the output of these branches of industry increased at least 60 per cent.

The increase in production of goods and services not covered by Table 9 has been greater than in these fields themselves. This is indicated by the fact that the number of workers in these four

branches increased between 1899 and 1925 by only about 35 per cent as compared with 54 per cent for the total population, reflecting the shift from agriculture, and more recently from manufactures, into commerce, professional and personal service, and construction. It is reasonable to assume that the increase in total output of goods and services of all kinds, per person in the total population, has been as great as the increase in output per worker in the four great branches of agriculture, mining, manufactures, and railroad transportation. This increase has been over 80 per cent (calculated by dividing 247, the relative number for output for 1925 as compared with 1899, by 135, the relative number for workers).[3]

The increase in production per hour of gainful labor has been even greater than the increase per worker. The hours of labor in every industry have been cut down during the past quarter century. Census statistics regarding hours of labor go back only to 1909. They show a reduction of 11 per cent between that year and 1923 (data for 1925 not yet being available). As compared with 1899 the reduction in hours for factory workers has probably been at least 15 per cent. In the other major branches of industry working hours have been cut down similarly.

Changes in Production From Census to Census.

More detailed analysis of the available data indicates that there was a decided increase in production per person employed in the major branches of industry from the beginning of the century down to the outbreak of the World War, and a still more rapid increase after the close of the war. The movement is to some extent obscured by the fact that the year 1914, in which the quinquennial census of manufactures was taken, was one of considerable depression. Consequently little if any increase appeared in the output per worker in manufacturing industries between 1909 and 1914. Had the census covered the more normal year 1913 the upward trend disclosed by the two preceding censuses would have been found continuing. From 1899 to 1909 the number of wage earners in factories increased about 40 per cent, while the physical volume of production increased at least 60 per cent.

The exceptional demand for certain types of commodities during the war resulted in very great activity of business. Many women were called from the homes, and many men from the farms, to the factories, while the farmers in turn by greater effort were able to increase their production. The process of expanding output, however, carried with it great dislocation of industry—the employment

[3] The calculations above summarized deal only with actual quantities, the combined percentages of increase being made up by weighting the percentages of change in the individual commodities according to their relative importance in terms of value. Roughly similar conclusions may be reached by adjusting the reported value of products according to the general wholesale price index.

of many workers on unfamiliar tasks, the turning of much machinery to purposes for which it was but little adapted, and the hasty erection of plants. Consequently efficiency of industry fell below normal. Production per worker in factories was no greater in 1919 than in the depressed year 1914. A very similar experience befell the railways.

The Increase in Production Since 1919.

The increase in production of the major industries since 1919 has been rapid and at the same time there has been a diminution in the number of workers in these industries, so that the increase in output per worker has been decidedly greater. The changes down to 1925, the latest year for which full data are available, are shown in Table 10. In this table also some of the figures are approximate only, but it is probable that they understate rather than overstate the increase in production.

Table 10.—General Indexes of Production and Workers, 1925 in Relation to 1919

Industry	Workers (thousands) [1]		Index 1925 (1919=100)			Value of output (millions of dollars)	
	1919	1925	Workers	Quantitative output	Output per worker	1919	1925
Agriculture	11,300	10,500	93	108	118	15,700	12,400
Mining	1,065	1,065	100	133	133	3,175	4,300
Manufactures	10,669	9,773	92	128½	140	24,748	26,778
Transportation (railway) [2]	1,913	1,744	91	104½	115	4,721	5,602
Total or average	24,947	23,082	93	120	129	48,344	49,080

[1] Figures in part are estimates.
[2] Data based on Class I roads. Figures exclude switching and terminal companies.

Between 1919 and 1925 the output of the agricultural industry increased approximately 8 per cent, of mining 33 per cent, of manufactures 28½ per cent, and of transportation 4½ per cent. In each of these branches, except perhaps mining, as to which there are no complete statistics, there were fewer persons employed in 1925 than in 1919, and the increase in output per worker ranges from about 18 per cent for agriculture to 40 per cent for manufactures.

For the four branches combined the increase in output (ascertained by weighting the percentages of increase in the individual branches by the relative value of their products in 1919) was approximately one-fifth, while there was a decrease of about 7 per cent in the number of workers. The output per worker, therefore, was nearly 30 per cent greater in 1925 than in 1919.

As already stated, the production of 1919 was relatively inefficient, so that the increase in output per worker in recent years is greater than would have been the case had normal conditions prevailed throughout the world. That this is far from being the only explana-

tion of the increase, however, is shown apart from other evidences, by comparison of the normal and prosperous year 1923 with the normal and prosperous year 1925. The number of wage earners in American factories declined by 4.4 per cent, but the quantity of output increased by 6 or 7 per cent, the output per worker being at least 11 per cent greater in 1925 than in 1923. Similarly the railways (Class I carriers) carried practically the same volume of traffic in 1925 as in 1923 (slightly greater freight and somewhat less passenger traffic), but were able to do so with 7 per cent fewer employees.

The decrease in the number of workers in agriculture, manufactures, and railroad transportation during recent years must not be supposed to have resulted in unemployment. There are no available general statistics of unemployment, but it is certain that neither in 1923 nor in 1925 were there any considerable numbers unable to find work. Indeed, had unemployment been prevalent in recent years the great increase in output, especially of manufactured goods, would have been impossible, for lack of markets. Those who have left the farms, the factories, and the railways have entered other fields. Some have gone into construction work which has been extremely active. A large number have engaged in the new forms of transportation activity opened up by automotive vehicles. Still more have entered mercantile pursuits, notably those arising from the rapidly increasing automobile traffic, and into professional and personal services.

Major Factors in Advancing Industrial Efficiency.

The fact that national output per capita has long been greater in the United States than in most other countries is in some measure owing to the abundance of agricultural land in proportion to the population, and the abundance and variety of mineral resources. During the earlier history of the country its progress was in considerable part owing to the opening up of new resources. The increase in output during recent decades, however, can not be attributed to this cause. There have been some new discoveries of minerals, notably of petroleum, but these contributions have been offset by the partial using up of other resources and by the necessity, with the growth of population, of extending cultivation to somewhat inferior lands. The principal factors in the recent increase in productivity are, therefore, human as distinguished from natural factors.

Education and Research.

Among these factors is the advance in education and scientific research. (Table 11.) Taking account both of the proportion of the children in school and of the average duration of attendance, the amount of elementary and secondary instruction given in 1926, per person of school age, was 151 per cent greater than in 1870, and 90 per cent greater than in 1890. In 1890 about 5½ per cent of the

children between the ages of 14 and 17 years were in high schools and academies; in 1926 over 38½ per cent. Of persons 18 to 21 years of age about 1½ per cent were in colleges and universities in 1890, and nearly 9 per cent in 1924. Meantime instruction has become much better in quality and especially more practical and more conducive to thinking power and to productive capacity. The rapidly expanding scientific research in colleges and universities, in endowed research institutions, and in laboratories of great industrial concerns, has also proved of great practical importance in the progress of industry.

Table 11.—Progress of Education in the United States

Item	1870 [1]	1890	1910	1920	1926
Pupils in elementary and secondary schools, per cent of total population for 5 to 17 years of age	57.0	68.6	73.5	77.8	82.3
Average days' attendance in the year	78	86	113	121	136
Expenditure for elementary and secondary schools per person 5 to 17 years of age	$5	$7	$17	$37	$67
Average annual salary of teachers in elementary and secondary schools	$189	$252	$485	$871	$1,277
Pupils in high schools and academies, thousands	----	298	1,032	2,041	3,313
Per cent of total population 14 to 17 years of age	----	5.6	14.3	26.4	38.6
Pupils in collegiate, postgraduate, and professional courses, thousands	----	83	202	414	726
Per cent of total population 18 to 21 years of age	----	1.6	2.8	5.6	8.9
Receipts of institutions of higher learning, exclusive of additions to endowment, millions of dollars	----	----	78	189	407
Percentage of illiterates in population 10 years of age and over:					
All classes	20.0	13.3	7.7	6.0	----
All whites	11.5	7.7	5.0	4.0	----
Native whites	----	6.2	3.0	2.0	----
Negro	81.4	57.1	30.4	22.9	----

[1] As to certain items data are not available for 1870.

Sources: Bureau of Education, Department of the Interior; Bureau of the Census, Department of Commerce.

Capital.

Another factor in the progress of industry is the large and increasing use of capital. The reports of corporations for taxation purposes furnish significant data as to capital used in production; the great bulk of industry is conducted by corporations. The combined assets of corporations in the fields of mining, manufacturing, transportation, and public utilities in 1924 were reported at more than $90,000,000,000, of which about $28,000,000,000 was in the form of current assets—inventory, accounts receivable, and cash—and the remainder in fixed assets—plant and equipment. In the mining industry the assets of corporations were equal to about $10,500 per wage earner employed (including the wage earners of noncorporate concerns). The corresponding proportion for manufacturing industries was about $5,250, and for the steam railroad more than $8,000.

The amount of capital used is rapidly increasing. The increase in the savings deposits in banks, the increase in assets of building and

loan associations, the premiums paid to life insurance companies less the operating expenses, and the additions to surpluses of corporations, together total six or seven billions annually. There are, of course, many other forms of savings, apart from these. It has been roughly estimated that the total annual savings amount to about $10,000,000,000. (See section on Finance.) These savings largely go directly to aid production. They include also, however, sums invested, as in homes and public improvements, for the purpose of producing not saleable commodities or services but a continuous use or enjoyment.

Machinery and Power.

The use of capital in industry is reflected conspicuously in the machine equipment of farms, factories, mines, and other productive enterprises. The relative abundance of capital makes it possible with advantage to discard promptly the less efficient machine in favor of the more efficient.

A rough measure of the use of machinery is furnished by the statistics of the capacity of prime movers. In manufacturing industries each wage earner on the average is aided by prime movers of a capacity of 4.3 horsepower; in 1899 the average was 2.1. The power employed on American railways has similarly increased. The average capacity of the individual locomotive has doubled since 1900 and it requires no more men to operate a locomotive than before.

A still broader view of the use of power is gained from the data of the production of mineral fuels and of water power. (See section on Fuel and Power.) The output of these fuels and water power, reduced to the terms of equivalent of coal, has averaged during recent years about 7½ tons per capita of the entire population, a figure four or five times greater than half a century ago, and about twice as great as in 1900. Moreover the heat and energy derived have increased much more by reason of the growing efficiency with which fuels are utilized.

Mass Production.

Except in agriculture, where the so-called one-man farm has thus far proved more efficient, American industry is characterized by large-scale production.

In 1925 there were about 10,600 manufacturing establishments in this country with an output each exceeding $1,000,000, and these together contributed over two-thirds of the value of all factory products. There were in 1923 nearly 1,000 factories each employing more than 1,000 wage earners and these reported 2,100,000 employees out of an aggregate of 8,800,000 in all plants. Considerably more than half of the total number of factory workers were in plants employing 250

or more wage earners each. The relative importance of large plants has increased materially; in 1909 (the first year for which comparable statistics are available) 43 per cent of all factory wage earners were in plants with more than 250 employees.

Large-scale production is particularly conducive to low costs where processes are repetitive—that is, where large quantities of the same product are turned out. The big plant can in such cases introduce highly specialized machinery adapted to the various particular tasks, whereas the smaller plant must often use machines intended for more general purposes, turning them first to one and then to another operation. Repetition also permits close specialization of labor.

The great magnitude of the domestic market has much to do with large-scale operation of plants. The United States has a population much greater than that of any other country with a high standard of living and the per capita income of its people averages much higher than in most other countries. For many manufactured articles the American market is greater than that of all other countries combined. In Europe the many national boundaries place barriers on the distribution of products, and tend to limit the size of the plants producing any given article.

Elimination of Waste.

Much of the progress of industry, especially during recent years, has been owing to the fact that problems of production and distribution have been systematically studied. The result has been to render discovery, invention, economy of material and labor, and improvement of methods in general largely an organized and continuous process rather than a haphazard one. This movement has come to be commonly designated as "elimination of waste" or "simplified practice." These systematic movements are conducted by individual corporations and other concerns, by associations of producers, dealers, and consumers, by special research organizations, by universities, and by the Federal and State Governments. There is a growing practice of cooperation among all interests toward this end.

One of the several important directions taken in recent years has been concerted agreement for the simplification of products. In scores of branches of industry, producers, dealers, and consumers have agreed to the cutting out of unnecessary sizes, shapes, and varieties of products, concentrating production on a limited number of standard forms, with a consequent marked reduction in average unit cost. The Department of Commerce has played a large part in this movement, which is discussed under the heading "Developments in simplified practice" on page 34.

Wages and Attitude of Labor.

Wages are higher in the United States than in most other countries and have advanced in recent years. The average annual wage in manufacturing industries for workers of all degrees of skill in 1925 was $1,280. Adjusted by the buying power of money, this was 35 per cent higher than in 1914, in spite of a considerable shortening of the working day. This increase in real wages has served to advance efficiency of industry and to widen markets for commodities which has tended to lower unit costs. Labor recognizes that large production tends to high wages and has shown little tendency to restrict output or to oppose labor-saving machinery. More detailed statistics of wages are shown on page 61.

CENSUS STATISTICS OF MANUFACTURES

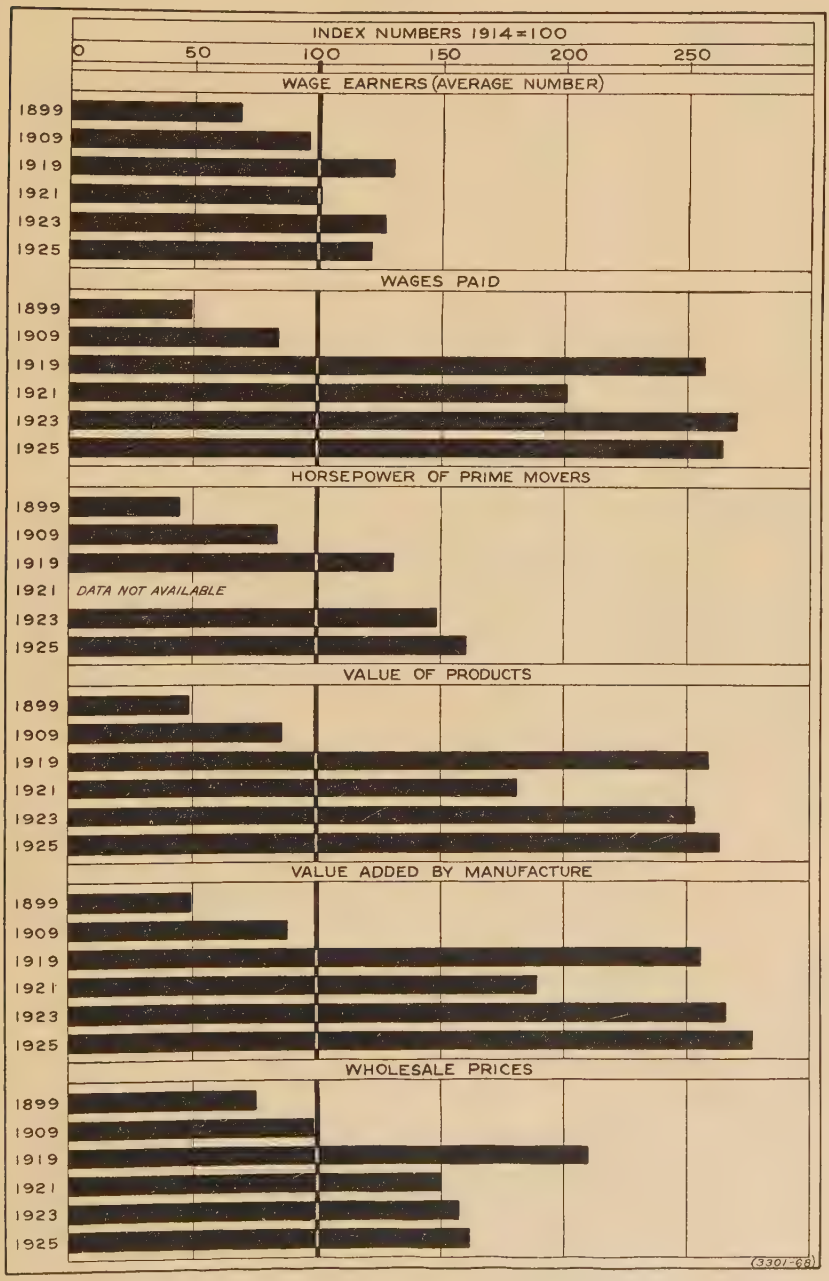
Census of 1925.

Complete statistics of manufacturing are furnished by the censuses which were taken decennially up to 1899, quinquennially from that time to 1919, and since then biennially. The results of the 1925 census are the latest available and the totals for the principal items are shown in Table 12, with comparison of similar data for each census since 1899. As the totals for output are necessarily expressed as values, which are affected by price changes, the general wholesale price index of the Department of Labor is also included in this table. The data are shown graphically in Chart VI. The number of wage earners [4] in 1925 was 78 per cent greater than in 1899, 22 per cent greater than in 1914, and 21 per cent greater than in 1921, but was smaller than in either 1919 or 1923. There were 384,000 less workers reported in 1925 than in 1923, a decrease of about 4 per cent. Every census since 1899 shows an increase in the average earnings of the workers. The average earnings per worker in 1925 amounted to about $1,280, which was almost three times as much as in 1899; over twice as much as in 1914, and about 2 per cent greater than in 1923. These figures indicate that the payments to wage earners have increased relatively more during the first quarter of the century than the cost of living, although there has been a considerable decrease in working hours during this period. Further information upon this subject is presented under the headings of Hours of Labor, Wages, and Earnings, page 61, and Retail Prices and Cost of Living, page 81.

Labor has been much aided by the constantly increasing use of machinery, which naturally results in a greater quantitative output per wage earner. One indication of greater use of machinery is the

[4] The average number of wage earners is ascertained by taking the actual number at a given day each month, adding, and dividing by 12. In the case of seasonal industries the number thus reached is much less than the number actually employed during the active season, and in all industries the effect of unemployment is substantially eliminated, but not the effect of over-time or part-time work. These characteristics of the statistics of wage earners should be borne in mind in considering average earnings obtained by dividing the amount of wages paid by the number of wage earners.

Chart VI.—INDEXES OF CENSUS STATISTICS OF MANUFACTURING INDUSTRY



increase in the horsepower of prime movers installed in manufacturing establishments. From 1914 to 1925 horsepower increased by over 60 per cent, which is about three times as large a percentage gain as that in the number of wage earners. This growth in horsepower does not really reflect the increase in efficiency of machinery, but only that in the quantity or magnitude of the machinery.

There is a great amount of duplication in the aggregate cost of materials and value of production as reported by the census owing to the use of partly finished goods produced by one establishment as materials for other establishments in the same or other industries. The total value of production, which includes this duplication, amounted to $62,714,000,000 in 1925, which was about five and one-half times as much as in 1899, over two and one-half times as great as in 1914, and was 4 per cent more than in 1923. In the section on Foreign Trade estimates are presented in Table 8 as to the net value of manufactures excluding such duplication. The estimate for 1925 was between $38,500,000,000 and $40,000,000,000.

Table 12.—General Census Statistics of Manufactures

NOTE.—The census statistics as originally published covered, for years prior to 1921, all establishments with products valued at $500 or more; but for 1921 and subsequent years no data have been included for establishments whose products were valued at less than $5,000. The statistics for groups of industries and individual industries in Tables 14 and 16 are as originally published, so far as the minimum value of products limit is concerned, but in Table 12 the figures for number of establishments, average number of wage earners, cost of materials, value of products, and value added by manufacture for 1914 and 1919 have been revised by excluding the data for establishments with products valued at less than $5,000, thus rendering the figures for these items strictly comparable for the last five censuses. Such revision is not, however, possible in the cases of salaried officers and employees salaries, wages, and primary horsepower and consequently these items are not strictly comparable as between 1919 and earlier years, on the one hand, and 1921 and subsequent years, on the other; and likewise the average rates of annual earnings in 1914 and 1919 were actually slightly less than appears from the table. (The average earnings as given on p. 61 are computed from the data as originally published and are closely comparable for the censuses for 1899 to 1925.) As to all items except number of establishments, the change in basis had only a negligible effect on the comparability of the figures as between different census years. In fact, the establishments reporting, at the census for 1919, products valued at less than $5,000 contributed only a fraction of 1 per cent of the aggregate number of wage earners and value of products.

[Salaries, wages, cost of materials, and values in millions of dollars; number of establishments, salaried officers and employees, wage earners, and horsepower in thousands]

Period [1]	Number of establishments	Salaried officers and employees [2]	Wage earners (average number)	Primary horsepower	Salaries [2]	Wages	Cost of materials	Value of products	Value added by manufacture	General wholesale price index 1913=100
1899	208	364	4,713	10,098	381	2,008	6,576	11,407	4,831	75
1904	216	520	5,468	13,488	574	2,610	8,500	14,794	6,294	86
1909	268	790	6,615	18,675	939	3,427	12,143	20,672	8,529	97
1914	176	956	6,888	22,264	1,266	4,063	14,162	23,837	9,675	98
1919	214	1,429	8,990	29,298	2,864	10,453	36,989	61,737	24,748	206
1921	196	1,141	6,938	[3]	2,551	8,193	25,155	43,427	18,272	147
1923	196	1,350	8,768	33,057	3,001	10,999	34,481	60,258	25,778	154
1925	187	1,340	8,384	35,773	3,147	10,730	35,936	62,714	26,778	159
Increase 1914 to 1925:										
Amount	11	384	1,496	13,509	1,881	6,667	21,774	38,877	17,103	
Per cent	6.2	40.1	21.7	60.7	148.7	164.1	153.7	163.1	176.8	

[1] Data for the coffee-roasting and spice-grinding industry are included for 1909 and earlier years, but not for 1914 and subsequent years.

[2] Statistics for salaried officers and employees and for salaries, as presented in this table, include data for central-administrative-office employees and for the salaries of such employees. No corresponding data are included in any of the other tables in this section. The number of central-administrative-office employees and the amounts of their salaries, as reported at the censuses for 1925 and 1923, were as follows: 1925—84,646 employees; salaries, $225,512,798; 1923—86,378 employees; salaries, $207,840,169. The corresponding figures for prior years were not tabulated separately.

[3] Not called for in schedules for 1921.

Source: Bureau of the Census.

Table 13.—Percentages of Change in Census Statistics of Manufacturing Industries

[Based on Table 12]

Item	Per cent of increase or decrease (−)			
	1899 to 1925	1914 to 1925	1919 to 1925	1923 to 1925
Wage earners (average number)	77.9	21.7	−6.7	−4.4
Wages	434.4	164.1	2.7	−2.4
Wage earners and salaried officers and employees	91.5	24.0	−6.7	−3.9
Wages and salaries	480.9	160.4	4.2	−.9
Cost of materials	446.5	153.7	−2.8	4.2
Value of products	449.8	163.1	1.6	4.1
Value added by manufacture	454.3	176.8	8.2	3.9
Primary horsepower	259.1	60.7	22.1	8.2

Source: Bureau of the Census.

The value added to materials by manufacture is a net figure and is significant because it represents the real service of manufacturing industries. This value as reported by the census of 1925 was $26,778,000,000, which was about five and one-half times as great as in 1899, two and three-quarters times as great as in 1914, and 4 per cent more than in 1923.

The increase in manufacturing industry from 1914 to 1925 becomes appreciably greater if the manufacture of distilled, malt, and vinous liquors, which has been reduced to a minimum by the prohibition amendment, is excluded. The principal items for these two censuses with the liquor industries omitted are as shown in the following table:

Item	1914	1925	Per cent of increase [1]
Wage earners (average number)	6,817,000	8,383,000	23.0
Wages paid	$4,004,778,000	$10,727,869,000	167.9
Value of product	$23,172,078,000	$62,652,572,000	170.4
Value added by manufacture	$9,190,322,000	$26,757,254,000	191.1

[1] As to the comparability of the data for the two years see headnote, Table 12.

Manufactures by Groups of Industries.

The Bureau of the Census divides manufacturing industries into 16 major groups. (Tables 14 and 16; see also headnote, Table 12.)

The value added by manufacture in 1925 was greater for each of these groups than in 1914 and was also greater than in 1923 for all groups except musical instruments, railroad repair shops, textiles, leather, and lumber. The largest percentage increases for 1925 as compared with 1923 were shown by tobacco manufactures, rubber products, paper and printing, and chemicals, while the value added to products by manufacture showed a significant decrease in the case of textiles, musical instruments, and railroad repair shops.

The number of wage earners was greater in 1925 than in 1914 for all groups except tobacco manufactures and musical instruments, the increases ranging from 91 per cent for rubber products to 5 per cent for stone, clay, and glass products. Comparisons with 1923 showed a decrease in number of wage earners for all groups except rubber products, paper and printing, and stone, clay, and glass products. The largest percentage decreases in wage earners were shown by the musical instruments, railroad repair shop, tobacco manufactures, and leather manufactures groups. The horsepower of prime movers shows a large increase for all groups of industries in 1925 as compared with 1914, having more than tripled for rubber factories and transportation equipment plants and more than doubled for machine shops and nonferrous metal plants. Increases in horsepower were also shown for all groups of industries except tobacco manufactures and nonferrous metals during the period from 1923 to 1925.

Principal Individual Manufacturing Industries.

The census classifies manufacturing establishments into about 350 industries. Each establishment is assigned to an industry according to the character of its major product. It often happens that an establishment makes a considerable quantity of goods falling outside its classification. It is necessary in some cases to change an establishment to some other industry at a later census on account of the change in the relative importance of the different kinds of merchandise made by it. For this reason statistics for a few of the industries are not closely comparable from one census to another. Table 16 shows data for the principal individual industries in 1914 and each of the last three censuses. In a good many cases costs of materials and value of products involve considerable duplication even within a single industry. It should also be borne in mind in comparing the rates of increase in values for the several industries that there have been considerable differences among them as regards the changes in the prices of materials used and the products made.

Some of the industries showing particularly large increases in value added by manufacture for 1925 as compared with 1923 were petroleum refining, printing and publishing, tobacco manufacturing, motor vehicles, motor vehicle bodies, electrical machinery, rubber products, silk manufactures, furniture, and bakery products, while marked decreases were shown by the cotton goods, woolen goods, clothing, pig iron, lumber, chemical, boots and shoes, coke, and railroad equipment industries.

Chart VII.—INDEXES OF THE VALUE ADDED TO MATERIALS IN THE 16 GROUPS OF MANUFACTURING INDUSTRIES

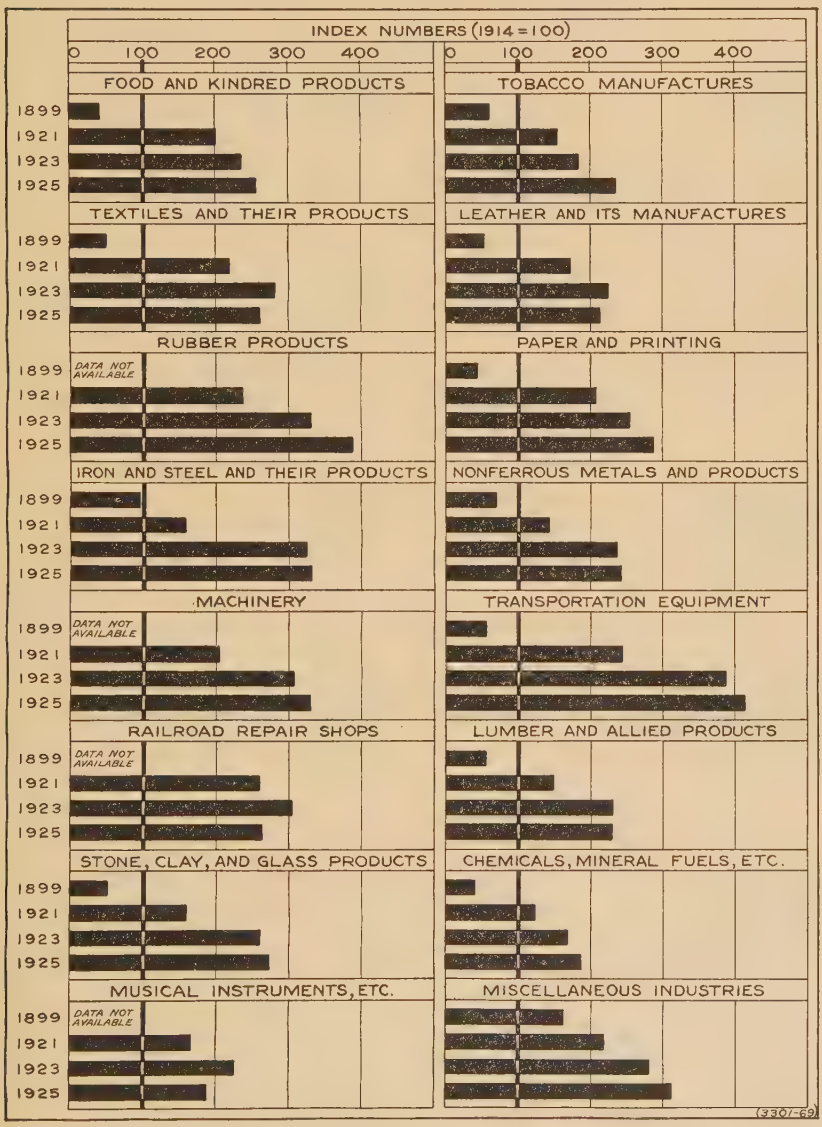


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Table 14.—Manufactures: Census Statistics by Groups of Industries

[Figures for wage earners and horsepower are in thousands; wages, cost of materials, value of products, and value added by manufacture are in millions of dollars. See headnote, Table 12, p. 26]

Item	1899	1914	1919	1921	1923	1925	1899	1914	1919	1921	1923	1925
	Food and kindred products [1]						Tobacco manufactures					
Wage earners	312	528	723	618	672	665	142	179	157	150	146	132
Wages	129	299	766	737	786	794	50	78	124	121	120	112
Cost of materials	1,838	3,791	10,009	5,957	6,766	7,749	107	207	484	609	516	426
Value of products	2,274	4,827	12,444	8,041	9,227	10,419	283	490	1,013	1,048	1,044	1,091
Value added by manufacture	436	1,036	2,435	2,084	2,461	2,670	176	283	529	440	528	665
Primary horsepower	(2)	2,477	3,173	(2)	3,686	3,882	(2)	35	44	(2)	44	42
	Textiles and their products						Leather and its manufactures					
Wage earners	1,030	1,506	1,610	1,510	1,715	1,627	238	307	349	280	345	315
Wages	342	676	1,481	1,472	1,744	1,654	100	169	363	314	389	356
Cost of materials	896	2,014	5,380	3,801	5,395	5,348	396	753	1,714	934	1,083	1,015
Value of products	1,637	3,445	9,211	6,957	9,463	9,123	584	1,105	2,610	1,544	1,880	1,768
Value added by manufacture	741	1,431	3,832	3,155	4,068	3,775	188	351	896	610	797	752
Primary horsepower	(2)	2,717	3,248	(2)	3,784	3,986	(2)	311	383	(2)	413	414
	Rubber products [3]						Paper and printing					
Wage earners	------	74	159	103	138	141	298	453	510	467	527	537
Wages	------	44	194	124	182	191	140	297	565	637	743	806
Cost of materials	------	163	594	378	501	719	214	581	1,308	1,332	1,544	1,614
Value of products	------	301	1,138	705	959	1,255	606	1,457	3,015	3,151	3,772	4,144
Value added by manufacture	------	138	544	327	457	537	392	876	1,707	1,818	2,228	2,529
Primary horsepower	------	199	429	(2)	606	657	(2)	2,039	2,347	(2)	2,744	3,061
	Iron and steel and products [4]						Nonferrous metals and products					
Wage earners	734	618	859	572	893	851	191	238	304	212	297	275
Wages	382	422	1,244	731	1,325	1,284	97	154	359	256	394	381
Cost of materials	987	1,316	3,424	2,140	4,153	3,734	497	964	1,737	886	1,767	1,947
Value of products	1,793	2,138	5,890	3,456	6,829	6,462	749	1,328	2,517	1,407	2,634	2,834
Value added by manufacture	806	822	2,466	1,316	2,676	2,727	252	364	780	521	867	887
Primary horsepower	(2)	4,588	6,430	(2)	7,202	7,519	(2)	549	952	(2)	1,169	1,158
	Machinery [5]						Transportation equipment, air, land, and water [6]					
Wage earners	------	619	998	662	908	859	363	313	859	406	606	560
Wages	------	412	1,240	833	1,254	1,225	189	231	1,259	591	964	908
Cost of materials	------	663	1,973	1,361	1,892	1,985	302	640	3,201	1,803	3,394	3,389
Value of products	------	1,582	4,769	3,235	4,728	5,020	583	1,137	5,627	3,018	5,333	5,452
Value added by manufacture	------	919	2,795	1,874	2,836	3,035	281	498	2,427	1,215	1,939	2,063
Primary horsepower	------	1,257	2,060	(2)	2,300	2,714	(2)	602	1,454	(2)	1,624	1,889
	Railroad repair shops [7]						Lumber and allied products					
Wage earners	------	366	516	418	523	458	547	865	864	703	932	921
Wages	------	253	727	672	773	668	212	447	860	670	963	978
Cost of materials	------	261	548	507	631	564	561	766	1,368	1,197	1,666	1,725
Value of products	------	553	1,354	1,267	1,520	1,333	1,031	1,616	3,113	2,457	3,633	3,689
Value added by manufacture	------	291	807	761	889	769	470	850	1,745	1,259	1,967	1,964
Primary horsepower	------	479	645	(2)	806	942	(2)	3,176	3,410	(2)	3,336	3,473

[1] Figures for 1899 are not strictly comparable with later years, which exclude data for "Coffee and spice, roasting and grinding" industry.
[2] No data.
[3] Included in "Miscellaneous industries" in 1899.
[4] Includes "Machinery" for 1899.
[5] Included in "Iron and steel and products" for 1899.
[6] Includes "Railroad repair shops" in 1899.
[7] Included in "Transportation equipment, air, land, and water" in 1899.

Table 14.—Manufactures: Census Statistics by Groups of Industries—Contd.

Item	1899	1914	1919	1921	1923	1925	1899	1914	1919	1921	1923	1925
	Stone, clay, and glass products						Chemicals, mineral fuels, and alcoholic liquors					
Wage earners	245	336	303	253	352	353	164	349	461	314	384	381
Wages	109	206	333	307	454	467	81	225	550	404	501	506
Cost of materials	95	241	423	428	573	603	478	1,485	3,904	3,111	3,680	4,185
Value of products	294	619	1,112	1,033	1,563	1,641	978	2,685	6,091	4,595	5,707	6,438
Value added by manufacture	199	378	689	605	990	1,037	500	1,200	2,187	1,483	2,026	2,253
Primary horsepower	[2]	1,494	1,585	[2]	1,936	2,348	[2]	1,920	2,425	[2]	2,740	2,985
	Musical instruments and phonographs [3]						Miscellaneous industries [4]					
Wage earners		49	69	45	58	47	483	216	291	223	272	262
Wages		31	76	54	75	63	203	120	312	268	334	337
Cost of materials		49	137	95	124	99	490	348	842	614	794	834
Value of products		120	321	213	283	232	1,004	663	1,664	1,300	1,684	1,816
Value added by manufacture		70	183	118	159	133	514	315	822	686	890	982
Primary horsepower		58	91	[2]	90	97	[2]	362	623	[2]	578	605

[2] No data.
[3] Included in "Miscellaneous industries" in 1899.
[4] Includes "Rubber products" and "Musical instruments and phonographs" in 1899.
Source: Bureau of the Census.

Table 15.—Percentages of Change (Minus (—) Sign Indicates Decrease) from 1914 and 1923 to 1925 in Census Statistics of Manufactures, by Groups of Industries

[Based on Table 14]

Class	1914 to 1925	1923 to 1925	1914 to 1925	1923 to 1925	1914 to 1925	1923 to 1925	1914 to 1925	1923 to 1925
	Food and kindred products		Textiles and products		Rubber products		Iron and steel and products	
Wage earners (average number)	25.9	−1.2	8.0	−5.1	90.6	2.4	37.7	−4.6
Wages	165.6	1.0	144.7	−5.2	331.5	4.7	204.4	−3.0
Cost of materials	104.4	14.5	165.5	−.9	340.9	43.4	183.8	−10.1
Value of products	115.8	12.9	164.8	−3.6	317.1	31.0	202.3	−5.4
Value added by manufacture	157.6	8.5	163.7	−7.2	288.9	17.3	231.9	1.9
Primary horsepower	56.7	5.3	46.7	5.4	229.7	8.5	63.9	4.4
	Machinery		Railroad repair shops		Stone, clay, and glass products		Musical instruments and phonographs	
Wage earners (average number)	38.8	−5.4	25.1	−12.5	5.1	0.4	−3.7	−19.5
Wages	197.1	−2.3	164.0	−13.6	126.6	3.0	103.6	−17.1
Cost of materials	199.5	5.0	115.6	−10.7	150.6	5.2	100.2	−20.1
Value of products	217.3	6.2	141.2	−12.3	165.2	5.0	93.6	−18.0
Value added by manufacture	230.1	7.0	164.1	−13.5	174.5	4.8	88.9	−16.4
Primary horsepower	116.0	18.0	96.8	16.8	57.2	21.3	69.2	7.9
	Tobacco manufactures		Leather and manufactures		Paper and printing		Nonferrous metals and products	
Wage earners (average number)	−26.1	−9.8	2.7	−8.5	18.5	1.8	15.5	−7.3
Wages	43.3	−7.4	110.4	−8.3	171.6	8.4	147.3	−3.4
Cost of materials	105.6	−17.5	34.8	−6.3	177.7	4.5	102.0	10.2
Value of products	122.6	4.5	60.0	−6.0	184.4	9.8	113.4	7.6
Value added by manufacture	135.0	25.9	114.1	−5.6	188.9	13.5	143.6	2.3
Primary horsepower	21.1	−3.3	33.0	.2	50.1	11.6	110.9	−.9
	Transportation equipment, air, land, and water		Lumber and allied products		Chemicals, mineral fuels, and alcoholic liquors		Miscellaneous industries	
Wage earners (average number)	79.0	−7.7	6.5	−1.1	9.1	−0.9	21.6	−3.5
Wages	293.9	−5.8	119.0	1.6	124.9	1.0	182.0	1.0
Cost of materials	429.7	−.2	125.3	3.5	181.9	13.7	139.2	4.9
Value of products	379.3	2.2	128.3	1.5	139.7	12.8	173.8	7.8
Value added by manufacture	314.5	6.4	131.0	−.2	87.7	11.2	212.1	10.3
Primary horsepower	213.5	16.3	9.3	4.1	55.4	9.0	67.1	4.7

Source: Bureau of the Census.

Table 16.—Manufactures: Comparative

[Wages and value in millions and tenths of millions of dollars; wage earners and horsepower

Industry	Average number of wage earners				Wages				Horsepower
	1914	1921	1923	1925	1914	1921	1923	1925	1914
Butter	14.1	18.5	20.8	17.8	10.1	22.9	25.0	22.3	91.4
Condensed milk	6.0	9.5	8.3	7.1	3.7	10.3	10.1	8.4	19.6
Slaughtering and meat packing	98.8	117.0	132.8	120.4	62.1	152.9	167.6	159.4	252.1
Canning and preserving, fruits and vegetables.	62.9	51.7	72.5	85.9	23.1	36.8	57.2	67.4	106.5
Flour and grain mills	39.7	35.4	35.2	32.0	24.6	43.1	41.7	39.7	821.4
Bakery products	124.1	148.5	162.6	160.4	76.9	198.9	214.6	219.6	106.8
Sugar refining (cane)	11.3	15.5	15.3	14.5	7.8	19.5	20.0	19.0	49.7
Beverages [1]	15.5	32.2	29.3	27.4	8.9	45.7	37.7	36.1	24.7
Cotton goods	379.4	412.1	471.5	445.2	146.1	328.2	396.6	353.9	1,563.8
Knit goods	150.5	161.9	194.2	186.7	59.8	132.2	168.3	168.7	122.9
Silk manufactures	108.2	121.4	125.2	132.5	47.1	113.4	126.8	142.7	111.4
Woolen manufactures [2]	195.3	190.9	237.5	206.1	93.4	209.6	280.2	243.0	435.5
Clothing, men's and women's	342.7	310.1	328.0	300.8	179.4	387.0	411.9	378.9	63.1
Blast furnaces	29.4	18.7	36.7	29.2	22.8	29.4	58.9	45.3	1,222.3
Steelworks and rolling mills	248.7	235.5	388.2	370.7	188.1	325.0	637.8	615.0	2,703.6
Stoves and hot-air furnaces	29.5	24.5	33.0	29.4	20.8	29.8	45.9	41.5	41.1
Tools and cutlery, etc	42.3	41.2	55.8	50.7	24.4	44.7	69.5	65.8	92.4
Steam fittings, etc	26.4	30.8	44.1	43.3	16.7	39.6	64.8	64.0	38.4
Structural ironworks [3]	47.2	32.9	51.6	48.3	33.4	47.5	80.8	77.4	109.1
Hardware, n. e. s	43.7	35.2	52.2	52.3	23.8	36.2	63.5	65.6	56.8
Lumber and timber products	479.8	364.2	495.9	474.0	240.0	313.5	476.0	456.7	2,190.4
Planing-mill products	96.2	78.0	103.0	111.3	61.9	96.0	133.3	146.6	410.3
Furniture	130.1	124.3	168.1	180.9	73.3	144.1	204.5	225.2	239.7
Leather, tanned	55.9	49.0	59.7	53.0	31.9	57.7	73.8	66.8	171.7
Boots and shoes, other than rubber	191.6	183.5	225.2	207.0	105.7	205.0	250.3	225.8	96.0
Rubber products [4]	74.0	103.3	137.9	141.1	44.2	123.6	182.1	190.6	199.2
Paper and wood pulp	88.5	105.3	120.7	123.8	53.2	127.0	151.5	160.1	1,612.0
Printing and publishing, and allied industries.	272.1	268.1	291.0	296.3	195.5	407.7	459.9	502.1	327.1
Chemicals, n. e. s. [5]	32.3	46.3	74.9	55.7	22.1	58.0	99.8	80.4	267.9
Coke	21.1	16.1	28.4	23.2	14.3	23.8	48.1	36.8	117.1
Fertilizers	22.8	16.9	18.6	19.6	10.5	16.0	16.4	17.7	113.9
Gas, illuminating and heating	43.8	35.0	42.3	47.0	26.8	53.3	59.6	67.4	213.3
Cottonseed oil and cake	21.8	16.2	12.7	16.2	8.5	12.3	7.9	11.4	249.8
Paints and varnishes	16.1	18.0	22.8	25.5	10.2	23.3	29.9	35.4	67.6
Petroleum refining	25.4	63.2	66.7	65.3	19.4	102.3	103.8	104.6	128.2
Soap	14.2	16.6	17.0	15.4	8.1	18.9	20.8	18.5	34.1
Marble, slate, and stone work	54.9	30.3	40.1	36.6	38.0	44.1	61.6	59.6	206.1
Cement	27.9	26.2	35.1	38.4	18.2	34.4	49.7	53.9	490.4
Clay products	100.2	68.8	102.7	102.8	54.9	73.7	123.8	127.1	442.5
Pottery, including porcelain ware	26.7	28.5	36.8	36.5	16.7	35.4	46.7	46.8	22.3
Glass	74.5	54.7	73.3	69.4	48.7	68.2	89.9	86.7	162.9
Copper	17.7	8.3	16.8	15.6	16.1	11.2	25.5	22.6	195.0
Lead	7.4	4.5	6.2	6.1	6.1	6.0	8.8	9.0	29.7
Brass, bronze, and alloys	40.3	39.8	64.7	62.9	25.1	46.3	88.8	90.6	122.0
Aluminum manufactures	4.6	9.6	16.3	14.4	2.6	10.8	19.8	19.8	12.3
Tobacco and snuff, etc	26.0	16.6	16.3	15.0	9.6	12.7	12.7	12.2	21.3
Cigars and cigarettes	152.9	133.4	130.0	117.1	68.3	108.2	107.7	99.4	13.5
Agricultural implements	48.5	30.4	31.0	28.7	34.6	39.8	40.5	37.4	121.3
Electrical machinery	118.1	161.2	234.9	239.9	73.8	194.2	305.5	323.8	226.3
Engines and water wheels	29.7	35.6	48.5	51.1	21.4	52.0	70.9	73.6	62.1
Foundries and machine shops [6]	362.5	373.7	517.8	456.5	244.1	476.4	735.8	675.0	763.8
Motor vehicles (excluding cycles)	79.3	143.7	241.4	197.7	66.9	222.0	406.7	341.2	105.0
Motor-vehicle bodies and parts	47.8	69.1	163.5	228.4	35.0	96.8	253.1	372.7	67.9
Locomotives [7]	17.4	16.6	30.7	12.8	11.1	20.5	51.9	18.2	50.4
Cars, steam and electric railroad [7]	58.1	48.0	80.6	50.4	43.9	70.9	129.2	77.2	135.9
Shipbuilding, steel	33.5	93.3	52.0	38.3	25.2	137.1	76.4	56.7	83.7
Steam-railroad repair shops	339.5	385.0	488.5	425.2	234.5	624.2	723.7	619.8	433.9

[1] Cereal beverages ("near beer" and similar soft drinks) for 1921, 1923, and 1925, included under "Beverages"; for earlier years included in "Liquors, malt."

[2] Includes "Woolen goods," "Worsted goods," "Carpets and rugs, wool," "Wool or hair felt goods," and "Wool-felt hats."

[3] Similar products are manufactured to a large extent by steelworks and rolling mills. The figures here given refer only to establishments engaged primarily in the manufacture of the specified classes of products.

[4] Includes "Rubber tires and inner tubes," "Boots and shoes, rubber," and "Rubber goods, not elsewhere classified," and also data formerly classified as "Belting, rubber."

Census Statistics by Major Industries

in thousands and tenths. Horsepower not reported for 1921. See headnote, Table 12, p. 26]

Horsepower—continued		Value of products				Value added by manufacture				Industry
1923	1925	1914	1921	1923	1925	1914	1921	1923	1925	
126.4	126.9	243.4	479.7	640.5	683.6	30.8	72.2	90.9	80.2	Butter.
48.3	53.9	69.2	176.8	187.1	171.2	13.4	44.3	33.1	31.2	Condensed milk.
382.1	441.5	1,652.0	2,200.9	2,585.8	3,050.3	210.3	332.7	409.8	425.1	Slaughtering, etc.
175.7	187.5	210.1	365.7	515.3	616.1	71.1	128.0	216.3	230.5	Canning and preserving, fruits, etc.
709.9	669.9	877.7	1,179.7	1,048.6	1,298.0	125.4	185.9	162.6	172.6	Flour mills.
193.2	227.3	491.9	1,090.0	1,122.9	1,268.2	217.6	491.4	548.4	600.2	Bakery products.
72.7	89.1	289.4	466.6	726.2	606.6	25.3	40.0	44.4	56.7	Sugar refining.
221.3	168.9	58.4	237.6	228.7	237.8	31.6	121.5	129.2	139.3	Beverages.[1]
2,153.3	2,236.4	676.6	1,278.2	1,901.1	1,714.4	245.0	570.8	753.8	637.2	Cotton goods.
183.7	176.6	258.9	634.1	848.2	810.0	112.2	273.6	364.2	356.0	Knit goods.
206.0	212.6	254.0	583.4	761.3	809.0	109.6	245.9	282.3	324.9	Silk manufactures.
615.6	659.3	464.2	888.6	1,312.7	1,199.4	166.2	424.7	564.2	443.3	Wool manufactures.[2]
80.3	69.1	932.1	1,957.5	2,585.4	2,380.9	449.7	942.2	1,191.0	1,099.2	Clothing.
1,686.4	1,380.4	317.7	419.8	1,007.6	765.3	53.1	58.7	180.0	147.9	Blast furnaces.
4,313.5	4,763.5	918.7	1,481.7	3,154.3	2,946.1	327.8	476.5	1,109.9	1,134.1	Steel works, etc.
65.4	63.5	67.9	101.6	155.8	140.8	44.1	60.6	102.4	93.6	Stoves and furnaces.
142.9	156.2	77.6	145.7	240.0	241.8	50.8	96.4	166.0	170.5	Tools, cutlery, etc.
91.1	109.3	63.9	127.4	222.0	228.9	37.0	77.2	138.7	151.6	Steam fittings, etc.
205.5	211.7	159.4	250.1	406.1	421.0	71.8	99.1	180.6	183.3	Structural iron-works.[3]
84.0	98.3	77.4	120.6	216.0	225.1	46.5	79.1	135.4	147.6	Hardware.
1,932.1	2,049.5	715.3	902.5	1,494.5	1,421.2	433.4	524.6	921.4	841.7	Lumber and timber
493.4	597.1	307.7	462.6	692.8	710.9	123.4	190.6	291.6	307.6	Planing-mill prod'ts.
344.9	402.5	270.9	550.2	776.5	868.1	147.2	296.6	434.3	483.6	Furniture.
230.2	222.7	367.2	383.4	488.9	462.0	83.0	105.6	167.1	155.4	Leather, tanned.
128.6	139.6	501.8	867.5	1,000.1	925.4	191.4	389.0	472.6	443.8	Boots and shoes.
605.6	656.9	301.0	704.9	958.5	1,255.4	138.0	327.0	457.4	536.6	Rubber products.[4]
2,178.6	2,427.0	332.1	667.4	907.3	971.9	119.0	221.4	333.6	366.0	Paper, wood pulp.
405.2	458.8	901.5	1,999.9	2,222.5	2,482.1	643.7	1,352.6	1,574.6	1,808.1	Printing and publishing.
669.3	657.9	158.1	390.8	630.9	547.0	68.6	200.3	314.0	275.4	Chemicals, n. e. s.[5]
332.6	409.6	99.3	221.3	516.9	378.6	30.1	52.5	162.9	100.9	Coke.
161.8	152.2	153.2	180.4	183.1	206.8	45.2	35.4	55.1	69.0	Fertilizers.
358.6	428.1	220.2	411.2	450.1	455.5	143.5	208.9	259.0	277.0	Gas.
223.7	239.0	212.1	217.2	226.4	295.7	31.2	22.4	28.9	51.4	Cottonseed oil, etc.
114.3	143.1	145.6	274.3	404.1	470.7	57.2	102.9	155.2	176.8	Paints, varnishes.
391.2	393.8	396.4	1,727.4	1,793.7	2,376.7	71.1	345.3	368.6	487.0	Petroleum refining.
74.8	56.7	127.9	240.2	276.4	278.3	39.1	89.8	102.9	93.4	Soap.
213.1	240.3	107.1	137.2	191.5	193.0	69.3	84.2	124.7	126.1	Marble, etc.
642.8	871.6	101.8	203.6	264.1	300.9	49.8	101.3	163.3	186.7	Cement.
480.6	517.2	135.9	194.3	333.4	333.7	93.2	126.1	230.1	233.7	Clay products.
44.5	50.1	36.9	84.2	114.4	111.1	24.9	59.0	80.8	77.2	Pottery.
240.5	271.6	123.1	213.5	309.4	296.0	77.1	127.4	196.2	182.3	Glass.
332.9	326.5	444.0	234.9	625.4	665.2	64.9	29.0	71.3	92.0	Copper.
42.4	47.2	171.6	150.6	227.7	283.0	17.6	16.5	20.4	28.2	Lead.
305.8	361.2	162.2	214.9	511.5	519.7	46.7	84.3	179.7	182.1	Brass, bronze, etc.
58.3	62.4	19.6	45.8	106.9	127.8	5.2	19.9	40.3	42.8	Aluminum manufactures.
18.6	17.5	175.3	241.7	223.0	216.2	98.7	85.3	76.6	121.8	Tobacco and snuff.
24.9	24.5	314.9	806.7	821.2	874.8	184.4	354.5	451.7	543.5	Cigars, cigarettes.
122.0	115.3	164.1	163.8	151.3	169.5	90.6	76.6	87.8	95.6	Agricultural implements.
480.3	589.4	335.2	834.0	1,293.0	1,540.0	180.4	489.9	744.4	903.3	Elec. machinery.
165.1	224.2	72.1	199.5	267.0	313.6	40.7	87.8	142.5	167.8	Engines, etc.
1,399.8	1,604.8	866.5	1,762.2	2,614.9	2,498.8	508.4	1,039.9	1,588.0	1,532.3	Foundries, etc.[6]
435.5	509.8	503.2	1,671.4	3,163.3	3,198.1	210.6	564.3	1,015.9	1,089.9	Motor vehicles.
425.1	662.3	129.6	408.0	1,013.1	1,523.3	66.0	194.1	449.0	660.6	Motor vehic. bodies.
91.2	114.2	43.4	102.0	215.4	65.4	19.8	46.6	91.1	23.7	Locomotives.[7]
250.1	243.9	205.3	340.5	604.4	390.8	66.7	128.6	190.7	124.7	Cars, steam and electric railroad.[7]
280.4	259.5	66.2	356.2	177.7	132.4	36.9	202.4	105.8	82.9	Shipbuilding, steel.
735.6	871.8	514.0	1,180.0	1,433.7	1,248.9	270.2	707.0	834.3	715.0	Repair shops.

[5] Chemicals, n. e. s. include rayon for 1923 and prior censuses, but not for 1925.
[6] "Foundries and machine shops" includes "Machine tools" and "Textile machinery and parts", for 1914 includes also "Iron and steel processed and welded" and "Steel barrels, drums, and tanks, portable," now reported as separate industries but of minor importance.
[7] Not made in railroad repair shops.

Source: Bureau of the Census.

DEVELOPMENTS IN SIMPLIFIED PRACTICE

During 1927 there were 17 simplified practice recommendations completed under the auspices of the Division of Simplified Practice, bringing the total of completed recommendations at the end of the year to 80. The reductions in variety of products made as a result of these recommendations of 1927 are shown in Table 17.

Table 17.—Progress in Simplified Practice, 1927

Commodity	Reductions in varieties		Per cent reduction
	From—	To—	
Metal spools		6	
Spark plugs		6	
Piston ring oversize		6	
Brake linings		37	
Roller bearings		172	
Flashlight cases	25	14	44
Razor blades (system of packing)	2	1	50
Salt packages	35	19	46
Turnbuckles	248	115	54
Solid section steel sash	42,877	2,244	95
One-piece porcelain insulators	272	249	9
Hospital and institutional textiles	575	26	95
Composition blackboard:			
Colors	3	1	66
Widths	18	8	55
Lengths	54	13	76
Ash handles (grades)		3	
Hickory handles (grades)		11	
Malleable foundry refractories			92
Folding and portable wooden chairs			20

At the time the simplification in a given field is promulgated by the general conference of those concerned with it a standing committee is appointed by the conference to insure the promotion and observance of the completed recommendation. The membership of the committee is truly representative of all phases of the industry, since it consists of representative manufacturers, distributors, and organized users of the specific commodity concerned. The usual custom of providing that the recommendation shall be subject to periodic surveys by this committee to review and make any recommendations with regard to modifications and revisions safeguards the fullest development of individual initiative and invention as well as care for the changing trends of business. Annual audits, or resurveys, conducted during the year by the standing committees of 21 different recommendations revealed that there is an average degree of adherence of 82½ per cent on the part of the accepters to their respective simplification programs. Based on factual surveys conducted on 11 recommendations in 1926, the average degree of adherence was 75 per cent. In 1927 there were 24 recommendations reaffirmed and 7 revised.

The steady adherence gains that have been made yearly would indicate that simplification programs, when followed out to their natural conclusions, result in benefits to small and large manufactur-

ing concerns alike as well as to the distributors and ultimate consumers. Many reports have been received by the Division of Simplified Practice from accepters of simplified practice recommendations giving approval to the simplification movement and at the same time commenting on the benefits that have been derived.

For example, one manufacturer reported that the "Absence of simplified practice would very easily double our interest charges, which would result in giving us an average additional interest charge of at least $6,000 a year. In addition, we would be compelled to provide larger storage sheds and storage ground. We believe we are perfectly conservative in saying that the adoption of uniform size brick effects an annual saving to us of at least $15,000 to $20,000 a year." A metal-lath manufacturer reported a reduction of $140,000 in his inventory, while a manufacturer of eaves trough and conductor pipe reported a saving of $30,000 in his inventory. One community reported savings of 5 cents per square yard and another 25 cents per square yard on its paving because of asphalt grade simplification. One lumber concern reported a reduction of $250,000 on its inventory, another $474,000, owing to the lumber simplification and standardization program. A manufacturer of concrete building units reported savings of $11,500 per year on account of simplification in that field, while another reported a saving of $500 in office operations alone, and still another stated he had been enabled to reduce the selling price of his product 25 per cent.

Simplification and standardization are rapidly gaining recognition as economic factors in business, helping to reduce the cost of manufacture of the commodity and the expense of distribution. In reviewing reports received from the accepters of simplification programs the Division of Simplified Practice found one manufacturer of die-head chasers had effected a 20 per cent reduction in his inventory, while another saved 65 per cent. Practically all accepters reported better turnover of commodities, quicker delivery service, and improved service in general to the trade.

The simplification programs for warehouse forms, bank checks and notes, inquiry, purchase order, and invoice forms not only established a simplified form for each of these documents in place of the most confusing variety in use before, but they also opened the way to a study of the possibilities of simplifying the varieties of office equipment, especially filing devices.

It has been the experience of the division that a simplified line of products makes the cost less to the ultimate consumer and makes for improved quality as well. If a distributor can cut his inventory by 75 per cent and obtain better, quicker delivery from the producer his gains are passed on to the consumer in the form of improved service, immediate replacement of items, and gradual reduction in cost

of the commodity as the simplified practice recommendation comes into general use.

Further evidence that simplified practice is proving of greater value to producers and purchasers is found in the rapidly increasing number of associations and individuals accepting the adopted projects. The list of associational accepters increased from 686 to 815 during 1927, while the individual list grew from 2,775 to 7,731. The increase of individual accepters is indicative of the fact that a greater number of commercial buyers are specifying the simplified lines when placing their orders because they offer better quality, quicker service, and not infrequently lower prices.

Not only is simplification being recognized in the United States as one of the most important economic factors of the present day but the story of its results has attracted attention abroad. During 1927 a total of 31 business and industrial leaders from overseas visited the division to learn first hand more about the work being done by American industries with the cooperation of the Government to eliminate the avoidable wastes. Some of the countries represented included Australia, Japan, Czechoslovakia, England, Germany, and Italy. The several articles that have appeared in the foreign press show that American methods of reducing manufacturing and selling costs are being intensively studied and in many instances applied by foreign producers and distributors.

The steady growth of interest in simplification during 1927 by manufacturers, merchants, and purchasers throughout the United States definitely reflects an increasing recognition of the usefulness of simplified practice in meeting the current conditions of keen competition and decreasing profit margins.

PRODUCTION AND MARKETING OF RAW MATERIALS

Mineral production in 1927 showed practically no change from the peak output reached in the previous year, according to the index of the Department of Commerce, which was 7 per cent greater than the average for the years 1923–1925, inclusive. The output of petroleum during 1927 reached a new high record, but all other minerals were produced in smaller quantities than in 1926. The greatest decline occurred in the production of iron ore, while silver had the smallest decrease. For the five-year period beginning with 1923 the yearly output of minerals has varied less than 10 per cent, although the production of individual mineral products shows wider fluctuations.

Conditions at the end of 1927, as revealed by the figures for December, showed declines from the same month of 1926 for all products of the mine except petroleum, and the decrease for the general index amounted to 14 per cent. The fluctuation between the maximum

and minimum months in 1927 (Table 18) for the general index of mineral products was much less pronounced than in the previous year. The abnormal deviations between maximum and minimum months for bituminous coal are explained by the labor troubles which prevailed in the industry during the last nine months of the year.

Table 18.—Indexes of Mineral Production

[Monthly average 1923–1925=100]

Product	Year							December		Maximum month, 1927	Minimum month, 1927
	1921	1922	1923	1924	1925	1926	1927	1926	1927		
Total	73	75	105	97	99	107	107	115	99	115	97
Petroleum	64	75	99	97	104	105	121	118	121	128	111
Bituminous coal	80	77	108	93	100	110	99	131	95	138	77
Anthracite	112	65	115	109	76	104	100	111	89	119	75
Iron ore (shipments) [1]	43	82	114	82	104	113	99	1	0	203	0
Copper	30	62	93	100	106	110	105	110	102	116	99
Lead	61	77	88	102	111	116	112	125	111	120	104
Zinc	39	67	97	97	106	114	110	121	115	117	105
Gold	92	99	96	103	101	98	93	101	87	118	76
Silver	84	87	103	101	96	96	93	106	95	98	88

[1] Owing to close of navigation, shipments cease during winter months.

Source: Department of Commerce, Survey of Current Business.

Mineral production was higher during the first four months of 1927 than in any other comparable period on record. While the index for May was larger than in any other May, except 1923, in each succeeding month, the indexes showed declines from the corresponding months of the preceding year. Thus, the quarterly indexes (Table 19) show the first and second quarters higher than in either of the two preceding years and the third and fourth quarters lower than in 1926 but higher than in 1925. Petroleum production was larger for all quarters of 1927 than in either of the two preceding years. Bituminous-coal production was unusually large during the first quarter of 1927 in anticipation of the miners' strike. During the remaining three-quarters of the year mine output was somewhat smaller than in corresponding periods of other recent years as a result of the strike and of the slackening of demand in the second half of the year. Production of anthracite and copper also showed considerable curtailment in the third quarter of the year but made some recovery in the fourth quarter.

Table 19.—Indexes of Quarterly Production of Principal Minerals

[Quarterly average 1923–1925=100]

Quarter	Total, 9 products			Petroleum			Bituminous coal			Anthracite			Copper		
	1925	1926	1927	1925	1926	1927	1925	1926	1927	1925	1926	1927	1925	1926	1927
January–March	94	92	111	96	95	117	98	111	130	104	54	91	111	109	109
April–June	100	102	104	108	100	121	81	92	82	113	124	111	107	110	107
July–September	107	115	109	109	108	126	100	105	90	86	123	96	103	110	100
October–December	96	120	105	103	115	122	119	130	96	2	116	100	105	112	104

Source: Department Commerce, Survey of Current Business.

FOREST PRODUCTS

The output of forest products, largely lumber, showed a decline of 3 per cent from 1926, the 1927 index being lower than in any year since 1922. Of the products comprised within the index, lumber alone declined, while pulp wood, wood used in the production of acetate of lime and methanol, and naval stores showed increased production. For lumber, as in the case of the general index, the 1927 output was lower than in any year since 1922; for pulp wood the production, although higher than in 1926, was lower also than at any time since 1923; the output of naval stores was greater than in any year on record, while distilled wood was higher than in any recent year with the exception of 1923. Production was smaller than in the corresponding month of 1926 during each of the first seven months of the year, but beginning with August the index was higher than in the corresponding month of 1926 and continued so to the end of the year with the exception of October.

All of the individual species of lumber included in the general index of forestry production declined from 1926. (Table 20.) For yellow pine the output was lower than at any time since the depression of 1921; the production of the group comprising western and sugar pine and white fir was smaller than at any time since 1922; for Douglas fir the production was smaller than at any time since 1924; California redwood showed a smaller output in 1927 than in any year since 1921; and output of hemlock, maple, birch, and beech was lower than in any postwar year. The total cut, by regions, and the actual production data, by species, are shown in Tables 4 and 5, respectively, in the section on Construction Materials.

Table 20.—Indexes of Output of Forest Products

[Monthly average 1923–1925=100]

Commodity or kind	Year							December		Maximum month, 1927	Minimum month, 1927
	1921	1922	1923	1924	1925	1926	1927	1926	1927		
Total	70	90	99	97	104	98	95	87	87	103	80
Lumber	70	90	99	96	104	98	93	84	83	103	83
Pulpwood	68	91	93	106	101	92	93	111	110	120	63
Rosin and turpentine	78	87	104	100	96	98	129	90	118	211	25
Distilled wood	45	86	113	94	93	99	100	98	91	115	89
KINDS OF LUMBER											
Yellow pine	80	96	97	99	104	98	95	96	92	100	90
Western and sugar pine and white fir	46	74	99	94	107	107	95	68	62	132	48
Douglas fir	58	86	99	95	106	101	97	82	85	106	80
Redwood	82	102	110	100	90	88	84	64	75	112	67
Hemlock	81	107	118	86	96	79	73	62	63	99	42
Maple, birch, and beech	81	78	103	91	106	80	66	42	48	125	36

Source: Department of Commerce, Survey of Current Business.

ANIMAL PRODUCTS

Marketings of livestock and other animal products were larger than in any recent year, surpassing the previous high levels of 1923 and 1924. (Table 21.) According to the index of the Department of Commerce, the increase in the index over 1926 was owing to larger marketings of wool, hogs, eggs, fish, and milk. Wool marketings were the largest on record. The movement of hogs to market, although larger than in 1926, was lower than in any other year since1921. Marketings of fish and milk were greater than in any recent year on record. For cattle and calves the movement to market in 1927 was lower than in any year since the depression of 1921, while for poultry the marketings, though lower than in 1926, were higher than in any other recent year except 1924; sheep marketings maintained about the same rate as in 1926 and were higher than in any other year since 1921.

The monthly index of animal marketings during each of the first six months of 1927 was higher than in the corresponding months of the preceding year. For the last half of the year, however, the movement to market of animal products showed declines from the same period of 1926 in each month except August and October. The range between the maximum and minimum months was somewhat wider in 1927 than in the previous year.

Table 21.—Indexes of Marketing of Animal Products

[Monthly average 1923–1925=100]

Commodity	Year							December		Maximum month, 1927	Minimum month, 1927
	1921	1922	1923	1924	1925	1926	1927	1926	1927		
Total	85	92	101	101	98	99	101	109	106	116	85
Wool	90	120	91	126	83	106	138	75	66	421	46
Cattle and calves	84	98	98	100	102	101	96	94	86	134	79
Hogs	80	85	107	108	85	77	80	91	98	99	60
Sheep	109	101	99	101	100	108	108	92	87	194	80
Eggs	94	104	106	95	99	99	103	57	46	208	46
Poultry	76	83	100	105	95	106	101	271	248	248	49
Fish	77	93	91	95	113	125	137	76	80	189	80
Milk	85	89	98	99	103	106	110	105	108	118	98

Source: Department of Commerce, Survey of Current Business.

CROP PRODUCTION AND MARKETINGS

Crop production, according to the index compiled by the Department of Agriculture, reached a greater volume in 1927 than in any year since 1920, continuing the gradual increase which has been noticed since 1921. (Table 1.) Of the more important crops, wheat, corn, barley, rye, buckwheat, flaxseed, hay, potatoes (both white and sweet), and sugar (both cane and beet) were harvested in greater quantities than in 1926; while the harvests of oats, rice, cotton, and tobacco were smaller. The total acreage of crops increased less than 1 per cent over 1926. The farm value of crops, taken as of December 1 of each year, which declined in 1925 and 1926, showed a gain of 8 per cent in 1927. All of the principal crops had larger farm values than in 1926 except wheat, rice, hay, and potatoes, both sweet and white.

Crop marketings, according to the index of the Department of Commerce, increased almost 7 per cent over the calendar year 1926, reaching a new high record. The increase in the general index over 1926 occurred despite declines in the marketings of fruit and cotton. (Table 22.) Marketings of grains were the largest since 1924, and the movement of vegetables to market was larger than in any recent year. Marketings of fruits and cotton products, although lower than in the previous year, were higher than in any other year on record.

Monthly crop marketings in 1927 exceeded those for the corresponding months of 1926 except in July, November, and December. All groups except miscellaneous products showed higher marketings in the first half of the year than in 1926, while in the second half marketings of grains and vegetables were larger than in 1926, but marketings of fruits and cotton were smaller.

Table 22.—Indexes of Marketing of Crops and Animal Products

NOTE.—Wide range between maximum and minimum is largely due to seasonal variations.

[Monthly average 1923–1925=100]

Period	Total, 8 animal products	All crops	Grains	Vegetables [1]	Fruits	Cotton products	Miscellaneous
1921	85	102	113	88	80	93	119
1922	92	102	119	102	90	86	90
1923	101	92	95	97	103	82	102
1924	101	107	116	102	103	99	96
1925	98	101	89	102	94	119	102
1926	99	106	92	100	112	124	108
1927	101	113	108	110	105	120	118
Per cent change, 1927 from 1926	+2.0	+6.6	+17.4	+10.0	−6.3	−3.2	+9.3
1924							
January–March	96	76	90	99	62	49	102
April–June	104	51	54	96	82	28	37
July–September	97	119	164	99	129	74	75
October–December	108	181	158	112	139	246	170
1925							
January–March	94	83	83	96	50	87	95
April–June	101	48	53	103	64	26	29
July–September	93	111	116	101	144	102	94
October–December	103	161	103	107	119	260	190
1926							
January	93	99	91	81	52	107	191
February	82	72	72	71	50	70	117
March	98	63	60	97	58	61	60
April	96	52	49	74	56	49	46
May	102	52	49	91	85	41	32
June	105	57	76	128	47	19	39
July	99	94	153	101	150	11	30
August	96	104	148	74	160	46	63
September	96	156	116	131	218	202	140
October	101	210	118	182	267	327	201
November	109	181	94	100	135	324	209
December	109	135	79	76	69	237	172
1927							
January	96	110	91	93	64	142	166
February	85	93	78	87	63	111	148
March	102	85	63	113	64	111	90
April	103	61	45	110	79	70	33
May	116	63	58	104	103	55	28
June	107	63	78	120	76	30	27
July	98	76	125	98	95	12	24
August	98	124	177	85	117	75	91
September	94	186	186	136	193	193	198
October	102	216	169	197	246	268	244
November	108	157	114	108	102	231	216
December	106	116	107	75	59	146	156

[1] Includes white and sweet potatoes, tomatoes, onions, cabbage, and celery.

Source: Department of Commerce, Survey of Current Business.

WHOLESALE AND RETAIL TRADE

Information relating to the volume of merchandise distribution through channels of wholesale and retail trade in the United States is furnished by firms in different lines of wholesale and retail trade to the Federal Reserve Board and the Federal reserve banks. The data furnished include the amount of sales in dollars from each firm and the value of stocks held by many of the firms. Approximately 1,350 wholesale firms representing 18 different lines of trade and having annual sales of about $4,000,000,000 furnish monthly statistics of dollar sales; these firms are located in about 350 cities distributed through the United States.

Statistics of retail trade for the country as a whole are furnished by department stores, mail-order houses, and chains of stores. Annual sales of reporting stores amount to approximately $4,500,000,000. Sales of department stores are reported by more than 500 firms located in 225 cities and amount to about $2,000,000,000 annually; statistics of mail-order house sales are furnished by four leading firms with yearly sales of approximately $525,000,000; and chain-store figures include 81 separate chains operating approximately 39,000 stores and having annual sales of nearly $2,000,000,000. The Federal Reserve Board has constructed index numbers based on these figures to show the changes in merchandise sales and stocks from month to month.

WHOLESALE TRADE

Sales of wholesale firms in nine lines of trade—groceries, meats, dry goods, women's clothing, men's clothing, boots and shoes, hardware, drugs, and furniture—included in the Federal Reserve Board's revised index of wholesale distribution were about 4 per cent smaller in 1927 than in 1926. Smaller sales were reported for all lines except shoes and drugs, and sales in those two lines were only slightly larger in volume than last year. The largest declines were in sales of meats, dry goods, hardware, and groceries.

In the spring and early summer wholesale trade continued near the low level reached in the preceding autumn, if allowance is made for the usual seasonal changes, but under the influence of an exceptionally early demand from retailers for merchandise for the autumn trade, sales of wholesale firms began to increase about a month earlier than in most years and reached almost as large a volume in August as in September, the usual peak month. (Chart VIII.) In September and October the weather was unusually warm for that season in all sections of the country and trade at wholesale in the latter month was much smaller than in August. For the third quarter, as a whole, wholesale trade showed considerable improvement over that in the first two quarters of the year. In October, on the other

hand, sales averaged 4 per cent smaller than in October of 1926 and some of the improvement indicated in the third quarter was lost. In the last two months of the year sales did not decline as rapidly as in October and the total decrease in wholesale trade from September to December was smaller than in the corresponding period of 1926. Index numbers showing wholesale trade in the nine lines by years from 1919 to 1927 and by months for 1926 and 1927 are given in Table 23 and the monthly trade in three important lines is shown by Chart IX.

Table 23.—Indexes of Value of Wholesale Sales

NOTE.—Monthly index numbers are not adjusted for seasonable variations. General wholesale price index, 1926=100.

[Monthly average 1923-1925=100]

Year and month	Total sales, 9 lines	Groceries	Meats	Dry goods	Men's clothing	Women's clothing	Boots and shoes	Hardware	Drugs	Furniture	General wholesale price index
1919	110	118	145	100	78	93	140	96	91	----	----
1920	114	126	121	107	106	95	125	116	95	----	----
1921	87	93	80	91	72	84	99	80	86	73	----
1922	89	93	83	89	80	90	97	86	87	85	----
1923	101	100	94	103	99	109	104	102	97	102	101
1924	98	101	96	97	98	97	98	97	99	93	98
1925	101	99	110	100	103	94	98	101	104	105	104
1926	98	98	115	94	95	70	101	100	107	102	100
1927	95	94	108	89	92	68	104	95	108	100	95
1926											
January	94	91	117	91	79	74	92	92	105	95	104
February	97	85	109	99	132	99	88	92	97	101	102
March	107	97	109	100	138	131	108	106	121	112	100
April	94	94	110	80	89	68	99	100	111	99	100
May	91	94	118	85	57	43	100	103	98	96	101
June	91	102	120	81	47	34	91	102	99	88	101
July	91	99	112	83	75	28	95	98	100	87	100
August	107	98	116	117	163	62	119	100	103	104	99
September	117	109	125	122	148	101	126	109	116	117	100
October	111	107	123	104	105	111	113	109	125	121	99
November	97	102	112	98	61	45	104	100	112	112	98
December	84	94	106	71	44	42	76	93	100	95	98
1927											
January	86	86	113	78	65	71	92	82	102	86	97
February	91	81	107	88	123	95	87	82	95	98	96
March	103	94	104	95	138	108	111	102	117	114	95
April	90	90	104	76	85	64	100	96	108	97	94
May	88	95	109	76	52	39	111	93	98	93	94
June	87	101	106	78	46	28	85	96	99	90	94
July	88	92	104	81	78	43	107	90	100	84	94
August	111	97	111	125	165	98	122	98	110	111	95
September	112	102	117	113	140	95	127	106	122	117	97
October	106	102	122	99	101	87	114	105	128	118	97
November	93	100	101	88	61	45	110	98	113	105	97
December	82	90	103	70	48	39	82	90	99	83	97

Sources: Federal Reserve Board; Bureau of Labor Statistics, Department of Labor.

Smaller sales of groceries at wholesale than in 1926 were reported by firms in all Federal reserve districts except the Minneapolis and Kansas City districts, the largest declines being in the Atlanta and Richmond districts. Sales of dry goods and hardware, which averaged about 6 per cent smaller for the country as a whole, decreased in almost all sections of the country from which reports were re-

Chart VIII.—INDEXES OF WHOLESALE AND RETAIL TRADE

NOTE.—Adjustment has been made for seasonal variations.

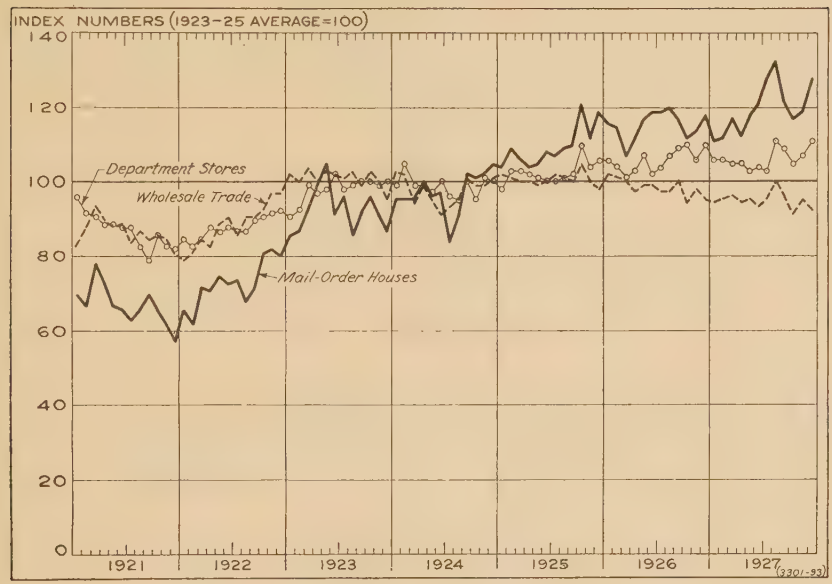
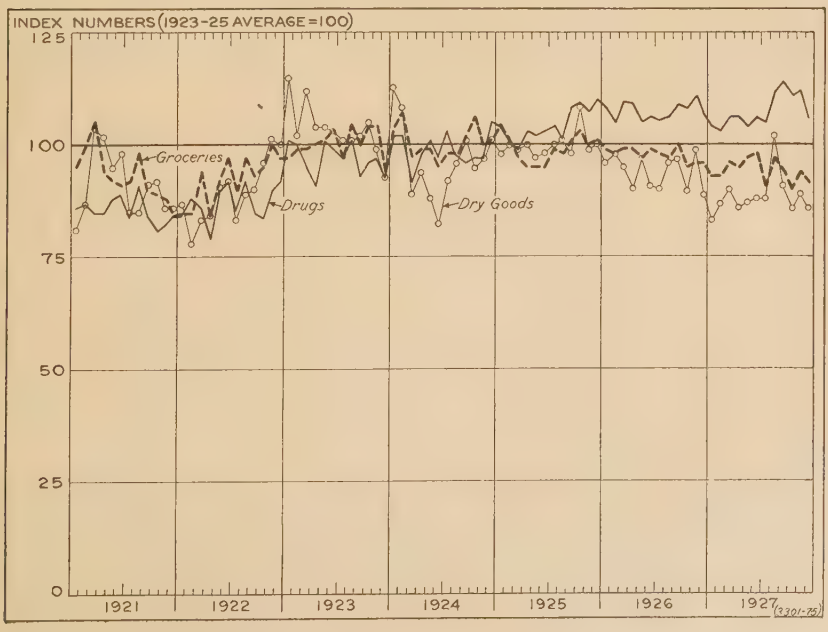


Chart IX.—INDEXES OF WHOLESALE TRADE, BY PRINCIPAL LINES

NOTE.—Adjustment has been made for seasonal variations.



ceived. Sales of shoes were larger than last year in 4 of the 10 districts reporting and smaller in 6 districts. Sales of drugs, which averaged for the country as a whole about the same as in 1926, were larger in 3 districts, smaller in 5 districts, and in about the same volume in 1 district. Table 24 shows in detail the index numbers of sales by Federal reserve districts for several lines of trade by years, from 1921 to 1927.

Table 24.—Indexes of Value of Wholesale Sales, by Federal Reserve Districts

[Monthly average 1923–1925=100]

Article and year	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	Minneapolis	Kansas City	Dallas	San Francisco
HARDWARE										
1921	80	82	80	88	76	74	87	88	77	77
1922	86	86	86	89	79	83	90	92	80	89
1923	102	100	103	107	97	102	100	99	100	106
1924	98	100	98	99	93	98	97	96	99	96
1925	100	100	99	94	110	100	103	104	101	98
1926	94	99	99	99	112	95	98	101	111	99
1927	89	93	95	104	93	90	97	100	107	96
SHOES										
1921	101		122	104	105	121	93			100
1922	92	99	101	104	103	121	100			104
1923	99	107	108	111	108	116	107			111
1924	99	98	95	94	92	99	88			86
1925	102	95	97	95	100	85	106			103
1926	104	104	106	105	103	83	88			106
1927	106	87	99	108	103	76	75			115
GROCERIES										
1921	89	91	97	92	87	101	91	82	83	92
1922	94	88	93	91	84	99	92	80	83	96
1923	101	102	102	100	96	104	100	96	94	103
1924	101	101	100	100	100	101	99	102	102	100
1925	98	97	98	100	104	95	101	102	105	97
1926	96	97	95	96	101	97	99	98	106	100
1927	92	94	90	90	87	95	104	103	102	96
DRUGS										
1921	81	83	89	[1] 84		86		100	91	77
1922	89	87	90	87		90		95	85	79
1923	95	96	100	98	96	101		99	93	90
1924	96	99	98	99	100	97		96	103	102
1925	109	105	102	103	104	102		105	103	108
1926	114	109	108	103	109	102		102	105	114
1927	117	107	107	103	115	99		109	102	113
DRY GOODS										
1921	89	107	101	98	85	90		89	89	88
1922	86	96	98	95	89	94		86	88	97
1923	100	110	112	113	102	105		97	101	109
1924	96	98	96	97	93	98		97	106	98
1925	104	92	92	90	105	97		107	94	93
1926	96	86	88	89	98	90		106	88	90
1927	91	73	80	87	97	82		97	92	86

[1] Average for 6 months July–December.

Source: Federal Reserve Board.

Sales of agricultural implements and farm machinery, which were smaller in the first half of the year than in the corresponding period of 1926, increased in the last six months, and for the year as a whole averaged about 4 per cent larger than in the corresponding period of last year. Smaller sales in the first half of the year than in 1926 reflected the effect of reduced returns from agricultural operations

in 1926, while larger sales in more recent months indicate the general improvement in agricultural sections in 1927.

Stocks of merchandise carried by wholesale firms averaged smaller in 1927 than in 1926 in most lines from which reports were received. Declining prices throughout the earlier months of the year and smaller sales, as compared with the year before, discouraged the accumulation of inventories, and wholesale firms reduced their stocks, as measured in dollar values, to a lower level than at any previous time in recent years.

Generally lower commodity prices in 1927 than in 1926 partly account for the decline in value of trade, but it is difficult to determine definitely the proportion of the decline that was owing to this factor.

RETAIL TRADE

Department Stores.

Sales of department stores were in about the same volume in 1927 as in 1926. (Chart VIII and Table 25.) They were characterized, however, by unusual fluctuations at certain seasons of the year and by wide variations in different sections of the country. In the early months of the year sales declined from the levels of the preceding autumn by an amount considerably larger than is usual, and, when allowance is made for usual seasonal changes, they reached a low point for the year in May and remained near this level in June and July. In August they increased sharply under the influence of exceptionally cool weather for that season and averaged 7 per cent larger than in August of 1926. In the autumn the weather turned unseasonably mild and sales did not expand as rapidly as is customary in those months. In December, on the other hand, holiday trade was in large volume and exceeded that for December of 1926. (Table 25.)

Table 25.—Indexes of Value of Sales of 565 Department Stores

NOTE.—Sales are affected by price movements and are also highly seasonal.

[Monthly average 1923–1925=100]

Month	Unadjusted							Adjusted for seasonal variations						
	1921	1922	1923	1924	1925	1926	1927	1921	1922	1923	1924	1925	1926	1927
Year	87	88	98	99	103	106	107							
January	81	71	80	87	86	89	89	96	85	92	99	98	106	106
February	71	65	72	82	80	81	83	92	83	93	101	103	105	107
March	92	81	99	91	95	102	100	91	85	99	99	103	101	105
April	89	89	94	104	106	103	111	89	88	97	99	102	103	105
May	88	90	102	100	100	107	102	89	87	98	97	101	107	103
June	87	87	101	94	99	101	101	88	88	102	100	100	102	103
July	63	63	71	72	75	78	75	88	87	98	96	100	104	104
August	66	70	79	74	78	83	89	83	87	99	95	101	107	111
September	73	84	89	93	95	101	100	79	90	100	100	102	109	108
October	97	103	117	111	129	124	119	86	92	100	95	110	110	106
November	95	105	113	111	114	121	122	83	92	99	101	104	106	107
December	138	150	161	168	178	184	186	83	93	100	100	106	110	111

Source: Federal Reserve Board.

In the Boston, New York, Cleveland, Atlanta, Chicago, and San Francisco districts sales were larger during 1927 than in 1926, while in the Philadelphia, Richmond, St. Louis, Minneapolis, and Dallas districts sales were smaller (Table 26). In the Kansas City district sales averaged about the same as in 1926. Larger sales in 1927 in the eastern sections of the country reflected in part sustained activity and employment in certain industries and smaller sales in the Federal reserve districts which include Southern and Middle Western States were influenced by reduced returns from agricultural operations in 1926. In the Philadelphia district smaller sales may be attributed in part to the influence of reduced industrial activity as a result of the strike in the bituminous-coal fields of Pennsylvania.

Merchandise inventories carried by department stores averaged slightly smaller for the year 1927 as a whole than in 1926. In the first half of the year they declined with sales, but after reaching a low point in the summer they increased slightly more than is usual in the autumn and at the end of December totaled about the same as at the close of 1926.

Table 26.—Indexes of Value of Sales of Department Stores, by Federal Reserve Districts

NOTE.—Monthly index numbers are not adjusted for seasonal variations. Comparisons are affected by changes in level of prices.

[Monthly average 1923–1925=100]

Year and month	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City [1]	Dallas	San Francisco
1919	78	76	79	77	84	94	------	------	93	------	98	68
1920	91	91	93	98	93	113	------	------	105	------	117	83
1921	89	87	89	86	89	96	82	90	97	------	97	79
1922	92	89	91	87	86	90	85	89	93	------	90	83
1923	98	96	101	100	97	100	98	99	99	------	96	96
1924	100	99	99	99	99	98	98	98	99	95	100	99
1925	102	105	100	101	104	102	104	103	102	100	104	105
1926	105	109	102	103	107	106	111	105	99	95	109	110
1927	106	111	98	104	105	107	112	103	97	95	106	113
1926												
January	101	94	86	83	87	86	87	85	85	79	91	91
February	74	83	78	81	78	87	86	85	76	73	90	82
March	95	98	103	98	107	103	107	105	93	92	107	109
April	104	103	98	102	103	106	107	108	107	94	103	104
May	104	106	105	106	108	114	116	105	101	92	112	107
June	105	104	98	97	102	101	106	96	92	90	103	99
July	77	76	70	78	78	77	84	72	81	72	76	91
August	76	78	71	85	77	80	89	81	84	76	87	107
September	97	104	88	97	91	89	118	105	103	98	109	109
October	120	134	119	121	127	124	125	126	107	103	127	118
November	119	129	124	113	132	123	123	122	101	107	121	116
December	182	196	180	177	197	181	183	172	152	164	178	193
1927												
January	103	96	80	85	84	85	84	79	81	80	87	96
February	78	85	78	82	78	88	90	83	76	76	86	85
March	97	99	94	98	99	99	108	98	92	89	97	109
April	111	112	103	116	110	109	117	108	104	98	109	115
May	101	102	94	105	103	108	108	96	91	88	112	107
June	110	109	97	99	100	99	107	93	91	86	95	95
July	74	74	65	78	72	76	82	68	75	68	69	89
August	84	84	73	93	80	86	99	90	92	83	80	114
September	99	106	83	95	91	97	114	97	93	96	105	111
October	115	128	109	113	121	128	119	127	109	106	125	119
November	120	134	120	112	125	119	125	120	100	110	120	121
December	182	201	174	176	195	191	189	177	155	165	189	195

[1] Monthly average sales in 1925=100.

Source: Federal Reserve Board.

Mail-Order Houses.

Sales of mail-order houses averaged 4 per cent larger in 1927 than in 1926. (Chart VIII and Table 27.) This increase for the year as a whole reflects larger sales in the last three-quarters of the year. In the first quarter of the year sales were 3 per cent smaller than in the first three months of 1926, but in the second quarter they increased and offset the losses in the first quarter, so that for the first half of the year as a whole sales averaged about the same as in 1926. In each of the last six months sales were larger than a year earlier. Smaller sales of mail-order houses in the early months of the year reflected for the most part reduced returns from farm operations in 1926, and the growth in the last half of the year reflected improvement in the agricultural regions resulting from good crops and satisfactory prices in 1927, as well as the results of the opening of retail stores in different cities and the increase in sales to customers in those cities.

Table 27.—Indexes of Value of Sales of Four Mail-Order Houses [1]

NOTE.—The index number for value of sales in 1919 was 93, and in 1920, 96. Sales are affected by both price changes and seasonal movements.

[Monthly average 1923–1925=100]

Month	Unadjusted							Adjusted for seasonal variations						
	1921	1922	1923	1924	1925	1926	1927	1921	1922	1923	1924	1925	1926	1927
Year	67	73	92	98	110	115	120							
January	64	61	83	92	100	108	103	69	66	86	95	104	116	111
February	60	55	78	89	98	103	101	67	62	87	95	109	115	112
March	89	78	105	98	111	121	125	78	72	93	95	106	107	117
April	72	72	96	106	109	112	120	73	71	99	100	104	112	113
May	56	65	91	84	88	98	99	67	75	105	96	105	117	118
June	58	64	80	83	95	105	107	66	73	91	97	107	119	121
July	46	54	69	64	81	91	93	63	74	94	84	107	119	127
August	53	53	68	69	83	91	105	66	67	86	91	109	120	133
September	68	70	85	99	106	113	118	70	72	92	102	109	117	122
October	83	101	125	132	158	140	147	66	80	96	101	121	111	117
November	78	103	114	122	135	143	149	62	82	91	102	112	114	119
December	75	101	110	138	156	155	167	57	80	87	105	119	118	128

[1] Sears, Roebuck & Co., Montgomery Ward & Co., Larkin Co., and National Cloak & Suit Co.
Source: Federal Reserve Board.

Chain Stores.

It has been estimated that total sales of all chain stores approximate $5,000,000,000 annually—about 12 per cent of total retail sales. Rapid growth in sales of these chain organizations in different lines of retail trade in recent years has resulted in large part from the increase in the number of stores operated.

Sales of the 81 chains in seven lines of retail trade reporting to the Federal Reserve Board amounted to $2,425,000,000 in 1927, an increase of 17 per cent over 1926. The number of stores operated by these chains increased 8 per cent during 1927 and at the end of

the year was 38,758. Increases in sales were largest for the firms selling wearing apparel and groceries, amounting to 28 per cent and 22 per cent, respectively. (Table 28 and Chart X.) Five and ten cent chain stores and drug chains both increased their sales by more than 10 per cent in 1927, and sales of candy and shoe chains were also larger than in 1926. Sales of cigar chains, on the other hand, were slightly smaller than in the preceding year.

Table 28.—Indexes of Value of Sales of Chain Stores

NOTE.—Comparisons are affected by changes in price levels. Monthly index numbers are not adjusted for seasonal variations, although many lines have a distinct seasonal movement.

[Monthly average 1923–1925=100]

Period	Grocery	5 and 10 cent	Wearing apparel	Drug	Cigar	Shoe	Candy
1919	45	53	36	64	72	76	53
1920	66	64	52	78	96	91	73
1921	59	66	59	79	95	86	75
1922	69	75	64	82	93	86	77
1923	85	88	83	93	98	93	93
1924	97	99	98	98	100	101	101
1925	118	113	119	109	102	106	106
1926	143	125	149	126	111	113	114
1927	174	138	190	143	110	115	119
1926							
January	131	89	84	114	92	83	89
February	129	92	88	111	92	75	92
March	144	107	122	124	102	109	110
April	147	110	134	122	108	126	120
May	140	116	150	122	115	132	117
June	143	111	138	119	109	116	108
July	143	112	127	126	112	111	112
August	131	111	122	123	106	93	103
September	133	115	157	124	109	108	116
October	150	140	201	133	116	120	121
November	155	135	200	128	107	114	123
December	167	258	263	169	159	163	161
1927							
January	155	96	100	134	97	82	95
February	148	104	114	129	99	84	103
March	174	116	148	143	111	96	115
April	172	135	199	144	113	150	136
May	171	123	171	134	113	109	115
June	178	123	172	136	109	118	114
July	167	121	157	141	111	109	112
August	170	130	165	140	106	101	110
September	171	128	198	137	106	108	119
October	190	153	250	151	111	121	124
November	189	146	250	144	105	118	125
December	202	279	350	182	156	178	164
AVERAGE NUMBER OF STORES							
1919	7,301	1,672	229	400	2,159	279	53
1920	8,461	1,774	306	409	2,183	284	71
1921	9,267	1,816	348	423	2,224	292	85
1922	11,933	1,844	381	435	2,518	305	102
1923	16,028	2,067	497	534	2,760	345	175
1924	19,019	2,231	616	581	2,797	409	189
1925	22,991	2,387	720	618	3,040	490	219
1926	26,296	2,558	833	724	3,349	553	255
1927	28,521	2,830	986	861	3,439	600	264
December, 1926	27,337	2,664	887	828	3,455	578	249
December, 1927	29,433	2,944	1,080	936	3,471	625	269

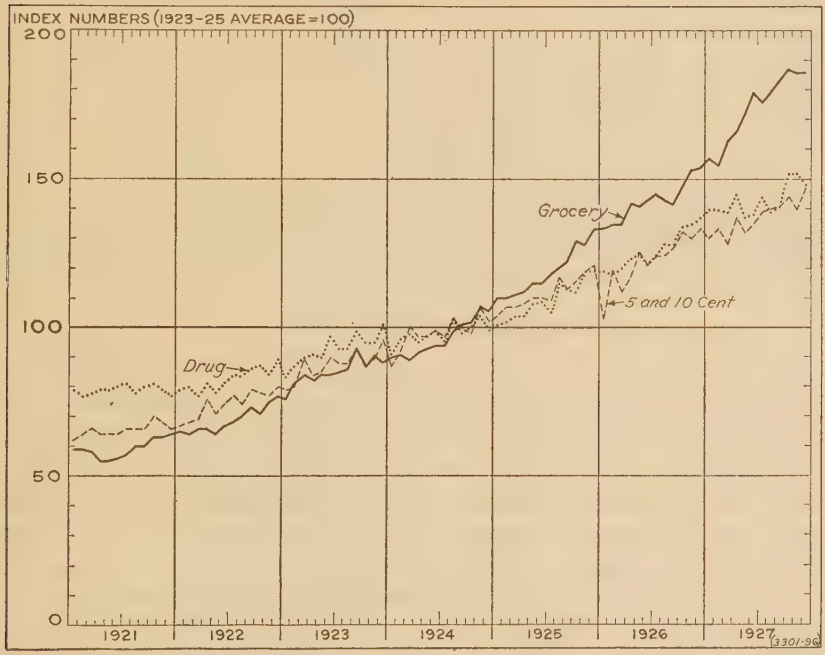
Source: Federal Reserve Board.

MISCELLANEOUS TRADE INDICATORS

In addition to the information presented in the preceding paragraphs, the volume of advertising and the value of money orders issued throw light on the volume of trade in the United States. (Table 29.) Magazine advertising occupied only a slightly larger space in 1927 and newspaper advertising used about 4 per cent less space than in 1926. Newspaper advertising was smaller in each quarter of the

Chart X.—INDEXES OF RETAIL TRADE, BY PRINCIPAL CLASSES OF CHAIN STORES

NOTE.—Adjustment has been made for seasonal variations.



year than in the corresponding quarter of 1926 and the increase in the amount of magazine advertising in 1927 was the smallest since 1921.

The value of domestic post-office money orders continued to increase in 1927, but the growth was less than that which occurred in any year since 1921. In each of the first three quarters of the year the value of money orders issued was considerably larger than in the corresponding period of the previous year, but in the fourth quarter the value of orders was only slightly larger than in the fourth quarter of 1926.

Real-estate conveyances in 41 large cities were smaller than in the previous year for the first time in seven years. (Table 29.) Conveyances were less in each quarter than in 1926, but the percentage of decline from the corresponding period a year earlier was smallest in the fourth quarter.

Table 29.—Miscellaneous Distribution Indicators

[Monthly average, 1923–1925=100]

Period	Magazine advertising [1]	Newspaper advertising [2]	Value of domestic post-office money orders issued [3]	Real-estate conveyances [4]	Period	Magazine advertising [1]	Newspaper advertising [2]	Value of domestic post-office money orders issued [3]	Real-estate conveyances [4]
1919	93	85	73	64	1926				
1920	114	97	84	73	Jan.–Mar.	104	104	109	103
1921	73	88	79	63	Apr.–June	125	114	111	114
1922	78	92	83	76	July–Sept.	93	96	107	106
1923	96	99	94	96	Oct.–Dec.	127	116	120	104
1924	100	98	101	97					
1925	103	103	105	106	1927				
1926	112	107	112	107	Jan.–Mar.	106	100	115	98
1927	113	103	115	102	Apr.–June	129	110	114	107
					July–Sept.	94	91	110	101
1925					Oct.–Dec.	122	112	121	101
Jan.–Mar.	94	99	104	96					
Apr.–June	116	106	104	114					
July–Sept.	85	90	99	105					
Oct.–Dec.	118	118	113	110					

[1] These figures represent the number of lines of advertising carried by 60 leading magazines.
[2] Compiled from 22 identical cities.
[3] Total of 50 cities transacting two-thirds of the total money-order business of the country.
[4] Real-estate transfers and conveyances compiled from official records of 41 large cities covering value of sales.

Source: Department of Commerce, Survey of Current Business, which lists original sources.

COMMERCIAL AND BANK FAILURES

Commercial failures were more numerous in 1927, according to statistics collected by Dun's Review, than in any other year except 1922, and total liabilities were larger than in the two preceding years but smaller than in any of the years 1921 to 1924, inclusive. (Table 31.) The total reported liabilities amounted to $520,000,000 in 1927, which was 27 per cent greater than in 1926. Increases were shown in both the number of failures and aggregate liabilities for each main group of reporting businesses. The percentage increase in liabilities was largest in the case of agents and brokers and smallest for trading firms. Statistics by months for 1927 (Table 30) showed about the usual seasonal changes. Failures reached a large total in the first quarter of the year, the peak liabilities occurring in March. Recessions occurred in the second and third quarters of the year and liabilities were smaller in September than in any other month. There was a considerable increase in both number of failures and the liabilities in December, which is the usual development at that season of the year.

Bank suspensions have been very numerous in the years since 1920, but decreased about one-third in 1927. The fact that bank failures were considerably less in number than in the preceding year was partly caused by the previous elimination of a large number of weak institutions and in part by the improved conditions in the agricultural areas. In both Western and Southern States, where failures have

been most numerous in recent years, increased agricultural production and higher income resulted in a considerable liquidation of indebtedness to banks. About two-thirds of the total decrease in number of suspensions in 1927 occurred in 12 States located for the most part in the Central West and the South; these States, however, continued to have about twice as many failures as the rest of the country combined.

Table 30.—Commercial Failures: Number and Liabilities, by Months

[Liabilities in millions and tenths of millions of dollars]

Month	Number						Liabilities					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
January	2,723	2,126	2,108	2,317	2,296	2,465	73.8	49.2	51.3	54.4	43.7	51.3
February	2,331	1,508	1,730	1,793	1,801	2,035	72.6	40.6	35.9	40.1	34.2	46.9
March	2,463	1,682	1,817	1,859	1,984	2,143	71.6	48.4	97.7	34.0	30.6	57.9
April	2,167	1,520	1,707	1,939	1,957	1,968	73.1	51.5	48.9	37.2	38.5	53.2
May	1,960	1,530	1,816	1,767	1,730	1,852	44.4	41.0	36.6	37.0	33.5	37.8
June	1,740	1,358	1,607	1,745	1,708	1,833	38.2	28.7	34.1	36.7	29.4	34.5
July	1,753	1,231	1,615	1,685	1,605	1,756	40.0	35.7	36.8	34.5	29.7	43.2
August	1,714	1,319	1,520	1,513	1,593	1,708	40.3	34.3	55.2	37.2	28.1	39.2
September	1,566	1,226	1,306	1,465	1,437	1,573	36.9	28.7	34.3	30.7	30.0	32.8
October	1,708	1,673	1,696	1,581	1,763	1,787	34.6	79.3	36.1	29.5	33.2	36.2
November	1,737	1,704	1,653	1,672	1,830	1,864	40.3	50.3	31.1	35.9	32.7	36.1
December	1,814	1,841	2,040	1,878	2,069	2,162	58.1	51.6	45.3	36.5	45.6	51.1

Source: Dun's Review, New York, N. Y.

Table 31.—Commercial Failures, by Classes, and Bank Failures

Year	Number of failures					Liabilities (in thousands of dollars)				
	Commercial				Banks	Commercial				Banks
	Total	Manufacturing	Trading	Agents, brokers, etc.		Total	Manufacturing	Trading	Agents, brokers, etc.	
1910	12,652	3,280	8,929	443	119	201,757	88,917	74,991	37,849	41,097
1911	13,441	3,502	9,480	459	107	191,062	87,372	84,240	19,450	25,512
1912	15,452	3,839	11,011	602	79	203,117	86,720	91,780	24,618	24,220
1913	16,037	4,243	11,145	649	120	272,672	123,123	115,115	34,435	31,546
1914	18,280	4,620	12,851	809	212	357,909	135,636	165,865	56,408	56,005
1915	22,156	5,116	16,030	1,010	133	302,286	112,026	150,234	40,026	37,223
1916	16,993	4,196	11,923	874	50	196,212	73,000	91,374	31,839	10,397
1917	13,855	3,691	9,430	734	42	182,441	79,544	70,117	32,781	18,452
1918	9,982	2,766	6,494	722	20	163,020	73,382	57,911	31,727	5,132
1919	6,451	1,865	4,013	573	50	113,291	51,614	37,670	24,007	16,521
1920	8,881	2,635	5,532	714	119	295,122	127,992	88,558	78,571	50,708
1921	19,652	4,495	13,999	1,158	404	627,402	232,907	254,794	139,700	173,028
1922	23,676	5,682	16,923	1,071	277	623,896	214,925	271,388	137,583	77,736
1923	18,718	4,968	13,064	686	578	539,387	281,316	209,930	48,140	203,739
1924	20,615	5,208	14,393	1,014	613	543,225	286,770	203,190	53,265	202,926
1925	21,214	5,090	15,161	963	464	443,744	167,685	215,369	60,691	164,699
1926	21,773	5,395	15,268	1,110	608	409,232	158,042	201,334	49,856	212,075
1927	23,146	5,682	16,082	1,382	394	520,104	211,505	228,194	80,405	143,449

Source: Dun's Review, New York, N. Y.

EMPLOYMENT, IMMIGRATION, AND WAGES

EMPLOYMENT AND PAY ROLL

Recent Variations in Factory Employment.

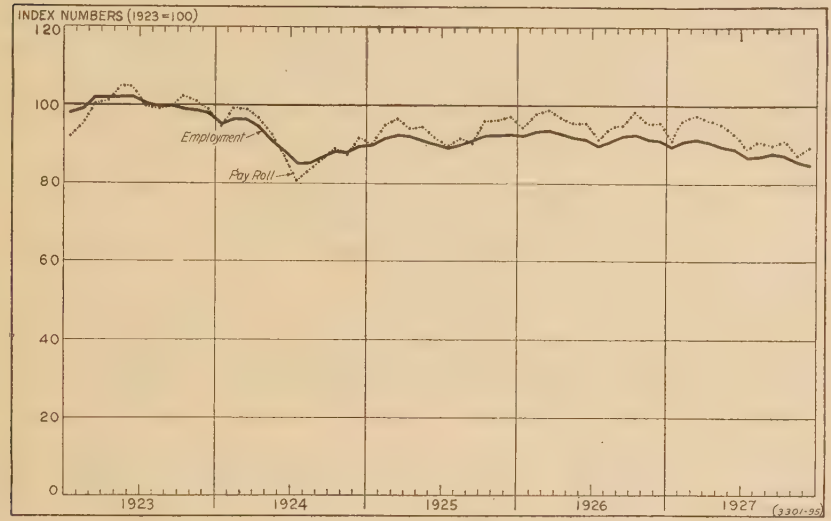
The most comprehensive current record of the volume of employment in manufacturing industries is the data collected for one week of each month by the Department of Labor. These statistics cover 54 industries, comprising 12 groups shown in Table 34, and are at present based on reports from about 10,800 establishments which employ approximately 3,000,000 persons. Comparisons are made from month to month for identical establishments with the result that the wage earners and pay rolls of any newly established plants do not count in the aggregates. Over any considerable period of time, therefore, in a progressing country, this method tends to show less than the actual increase or more than the actual decrease in the number of wage earners employed in industry and the amount paid them. In other words, there is a distinct downward bias in these figures and in the index based upon them which becomes evident in even so short a period as one or two years. This effect is inherent in the method necessarily used and appears also in other indexes of employment. Changes over longer periods in volume of employment can be judged most accurately by census statistics which include all plants. Employment data for manufacturing establishments collected biennially by the Census Bureau are published under the heading of Census Statistics of Manufacture, page 24, and in Table 35. The indexes of the Department of Labor are reasonably satisfactory for showing the short-time fluctuations in employment.

The monthly variations in the amount of pay roll are normally more marked than those in the number of persons on the pay rolls, since the total amount reflects both changes in the number employed and changes in the average working time, besides such changes as may occur in wage rates. Nevertheless the two indexes which are shown in Chart XI almost invariably move in the same direction.

The factory-employment index, which had increased slightly in 1925 and 1926, showed a considerable decrease during 1927. Employment increased slightly in the first quarter, as is customary at that season of the year, but a decline started in April which continued until July. After a slight expansion in August and September factories again reduced the number on their pay rolls and at the end of the year it was lower than in any month since August, 1924. The employment index in December was 6.4 per cent lower than a year earlier. Changes in the pay-roll index during 1927 were very similar to those in the index of employment, although fluctuations were slightly wider. The net decline in the index of pay rolls during 1927 amounted to 6.6 per cent and the index in November was lower than

in any month since November, 1924. Pay rolls increased slightly in December. The index of employment averaged lower in 1927 than in any of the four preceding years, but the pay-roll index averaged slightly higher in 1927 than in 1924. It seems worthy of note that the percentage decrease in factory pay rolls has been very little greater than the decrease in number employed during the past year,

Chart XI.—INDEXES OF EMPLOYMENT AND PAY ROLL IN MANUFACTURING INDUSTRIES



as this indicates that the rather marked decline in employment has not been accompanied by any considerable decrease in the average earnings of the workers employed. (See average weekly earnings per capita, p. 62.)

Table 32.—Department of Labor Indexes of Factory Employment and Pay Rolls

[Indexes based on monthly average 1923=100. Statistics cover 54 industries comprising the 12 groups shown in Table 34 and are based on reports from over 10,000 establishments employing approximately 3,000,000 persons. Indexes are weighted according to relative importance of industries included]

Month	Index of employment					Index of pay roll				
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
Average	**100.0**	**90.3**	**91.2**	**91.9**	**88.5**	**100.0**	**90.6**	**93.6**	**95.8**	**92.4**
January	98.0	95.4	90.0	92.3	89.4	91.8	94.5	90.0	93.9	90.9
February	99.6	96.6	91.6	93.3	91.0	95.2	99.4	95.1	97.9	96.4
March	101.8	96.4	92.3	93.7	91.4	100.3	99.0	96.6	99.1	97.7
April	101.8	94.5	92.1	92.8	90.6	101.3	96.9	94.2	97.2	96.6
May	101.8	90.8	90.9	91.7	89.7	104.8	92.4	94.4	95.6	95.6
June	101.9	87.9	90.1	91.3	89.1	104.7	87.0	91.7	95.5	93.3
July	100.4	84.8	89.3	89.8	87.3	99.9	80.8	89.6	91.2	89.1
August	99.7	85.0	89.9	90.7	87.4	99.3	83.5	91.4	94.6	91.0
September	99.8	86.7	90.9	92.2	88.0	100.0	86.0	90.4	95.1	90.1
October	99.3	87.9	92.3	92.5	87.6	102.3	88.5	96.2	98.6	91.2
November	98.7	87.8	92.5	91.4	85.9	101.0	87.6	96.2	95.4	87.8
December	96.9	89.4	92.6	90.9	85.1	98.9	91.7	97.3	95.6	89.3

Source: Bureau of Labor Statistics, Department of Labor.

A comparison of the annual index of employment for 1927 with 1923 shows an apparent decrease of over 11 per cent in the number of workers employed by factories, but this is evidently partly a result of the fact that new establishments are not included in the index. In the period from 1923 to 1925 this index of employment declined 8.8 per cent, whereas the average number of workers reported by the Census of Manufactures for those years (Table 36) decreased only 4.4 per cent, which seems to indicate that the actual decline in employment has only been about one-half that recorded by the index. So, too, the monthly pay-roll index decreased 6.4 per cent between 1923 and 1925, while the wages paid in all manufacturing industries, as collected through the Census of Manufactures, were only 2.5 per cent less than in 1923. The causes of the gradual decline in factory employment are discussed elsewhere. (See p. 20.)

Table 33.—Indexes of Employment of Labor and Pay Roll in Manufacturing Industries in Certain States and Cities

[Base years: New York, 1914; Pennsylvania and New Jersey, 1923; Wisconsin, 1915; Illinois, 1922; Detroit, 1920]

Month	New York [1]		Pennsylvania		New Jersey		Wisconsin [2]		Illinois [3]	Detroit [4]
	Employment	Pay roll	Employment	Pay roll	Employment	Pay roll	Employment	Pay roll	Employment	Employment
1925										
March	107	245	93	92	89	89	120	279	99	136
June	103	231	90	87	87	88	122	285	97	145
September	105	238	90	85	93	90	124	287	98	156
December	108	252	93	94	97	101	124	291	100	78
1926										
March	108	252	93	96	95	99	125	303	102	163
June	104	242	91	93	90	96	121	281	101	136
September	105	247	93	93	100	106	124	278	103	141
December	104	245	91	96	100	111	117	254	100	53
1927										
January	102	241	89	90	100	107	115	251	98	130
February	103	243	89	94	100	109	119	274	98	135
March	103	248	90	94	99	108	119	273	98	137
April	102	239	87	92	97	106	117	268	98	137
May	100	236	87	89	94	102	115	259	97	124
June	100	235	86	87	94	103	116	267	97	114
July	99	229	84	81	93	98	120	256	93	122
August	99	234	84	85	93	101	122	279	94	124
September	101	241	84	83	95	102	119	265	94	119
October	102	239	84	85	95	102	117	262	94	116
November	100	230	83	84	94	100	112	251	92	118
December	98	233	81	83	93	103	112	249	91	124

[1] Relative to average of 7 months, June to December, 1914.
[2] Relative to first quarter of 1915.
[3] Based on the number on the pay roll nearest the 15th of the month.
[4] Based on the figures for the last week of the month; the December index is low on that account.
Source: Department of Commerce, Survey of Current Business, which see for original sources.

Reports from various State labor bureaus and from the city of Detroit indicate changes in employment rather closely parallel to those shown by the index of the Department of Labor. (Tables 32 and 36; in the latter all the indexes are converted to the same base, 1923 taken as 100.) At the end of 1927 employment in all of the States for which statistics are collected was substantially smaller

than a year earlier, the decreases ranging from 11 per cent for Pennsylvania to 4 per cent for Wisconsin. Employment in the city of Detroit, however, was over twice as large in December, 1927, as a year earlier on account of increased activity of automobile plants located there.

Indexes for Groups and Individual Industries.

Separate indexes for the number employed and for pay rolls are computed by the Department of Labor for 12 major groups of manufacturing industries. (Table 34.) These group data are subject to the same defect regarding comparison over long periods of time as the general index. For 1927, as a whole, increases over 1926 in average employment were reported by the textile products and paper and printing groups, while all other groups show declines. Employment in the vehicle industry decreased more than 9 per cent, and the iron and steel, other metal products, lumber, and stone, clay, and glass groups all reported decreases of more than 5 per cent in the number of workers. In comparison with 1926 pay rolls show the same trend for each group as did employment, except that in the miscellaneous group a slight decline in employment was accompanied by increased pay-roll payments, while for the food-products group there was no change in pay roll despite a slight decline in employment.

At the end of the year employment was lower than a year previous for all groups, and pay rolls were also smaller except for the paper and printing group.

Compared with the 1923 base, paper and printing was the only group which showed an increase in employment for 1927, while the paper and printing, miscellaneous, chemical, and stone, clay, and glass groups showed increases in pay rolls. The largest declines from 1923 in employment, ranging from 16 to 18 per cent, were reported by the vehicle, lumber, and tobacco industries, while the vehicle, tobacco, and leather products groups all showed declines of about 15 per cent in pay rolls.

Employment and pay-roll indexes for the principal individual industries (Table 35) show, as a rule, trends corresponding to the respective group totals. In the paper and printing group, however, a difference in trend since 1923 is shown by important industries; employment at paper and pulp mills has been consistently below 1923, while both employment and pay roll in newspaper establishments has increased steadily in each of the past four years. In three other groups—iron and steel products, vehicles, and textile products—there have been considerable differences shown by important component industries in the period since 1923. Employment at iron and steel mills has shown only about one-half as large a decline since 1923 as employment at foundries and machine shops. Automobile employment averaged only slightly less in 1927 than four years earlier, while employment in the steam railroad car build-

ing and repairing industry showed a decline of 27 per cent. In the textile group the woolen and worsted goods industry showed a considerably larger average decline for 1927 as compared with 1923 than the cotton goods industry, although in the years 1924 and 1925 employment was relatively larger in the woolen goods industry.

Further information regarding variations in the time worked by factories is shown in Table 41 dealing with hours of labor and earnings.

Table 34.—Indexes of Employment and Pay Roll Totals in Major Groups of Manufacturing Industries

[Monthly average 1923=100. Combined index for each group is weighted according to relative importance of industries covered. Figures represent number on pay roll and amount of pay roll for one week of each month]

Yearly average and month	Food products		Textile products		Iron and steel products		Other metal products		Lumber and manufactures		Leather products	
	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll
1923 average	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1924 average	95.6	97.9	88.2	86.8	86.3	86.6	92.7	91.6	94.8	97.3	90.6	88.3
1925 average	90.9	93.7	89.3	89.5	87.3	90.6	96.7	97.9	93.1	98.1	92.0	89.4
1926 average	89.8	93.8	86.1	85.9	92.0	97.2	97.5	98.5	90.8	97.7	90.3	87.8
1927 average	89.3	93.8	87.2	88.5	85.7	89.3	90.5	90.3	83.4	91.0	88.4	85.5
1925												
March	90.1	92.6	92.4	97.0	88.8	94.0	97.3	99.9	92.5	97.9	95.4	96.2
June	89.3	93.3	87.8	84.8	86.6	88.7	95.9	97.0	93.7	100.2	85.9	82.3
September	92.3	93.0	86.9	83.2	86.4	85.4	96.3	92.6	94.2	99.7	94.8	90.6
December	92.5	96.7	89.6	90.0	90.1	96.9	101.5	105.7	91.6	99.8	89.2	84.3
1926												
March	88.3	91.9	90.0	93.0	93.1	100.7	102.9	106.9	89.7	96.3	91.4	90.0
June	88.7	93.9	84.0	81.4	92.8	98.4	96.3	97.5	92.1	100.0	85.3	82.7
September	92.4	96.3	84.2	82.9	92.6	96.0	95.7	93.6	91.8	100.2	93.9	93.6
December	90.4	95.2	87.7	89.2	89.8	96.3	93.6	95.6	88.2	96.4	90.9	86.0
1927												
March	87.2	91.0	89.7	94.0	90.3	97.8	94.6	97.9	82.9	90.6	91.6	90.0
June	90.7	96.4	86.0	86.2	86.9	91.8	90.7	91.5	84.0	92.7	85.2	82.5
September	92.1	95.9	86.9	88.6	84.0	84.7	88.9	86.0	85.1	93.7	91.3	91.0
December	89.9	94.6	86.6	87.9	79.7	82.8	86.0	87.1	79.8	88.0	82.9	76.5

Yealy average or year	Paper and printing		Chemicals, etc.		Stone, clay, and glass		Tobacco manufacture		Vehicles		Miscellaneous industries	
	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll
1923 average	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1924 average	100.2	102.2	91.6	92.7	96.7	101.3	94.0	95.6	88.6	87.5	87.8	90.6
1925 average	100.8	102.9	94.2	95.9	97.6	103.5	92.0	92.7	91.0	93.5	91.6	94.6
1926 average	103.6	111.5	98.4	101.8	99.7	106.4	85.6	87.7	91.2	92.8	96.8	101.9
1927 average	103.7	112.8	95.1	100.9	94.2	100.3	84.0	85.2	82.8	85.0	96.3	102.8
1925												
March	101.5	106.0	99.0	100.3	95.5	101.9	93.6	90.4	89.9	95.6	93.2	98.1
June	99.4	102.6	87.1	91.0	100.7	106.0	90.6	92.3	90.3	92.6	90.9	92.8
September	100.2	102.5	97.3	95.6	99.8	103.4	92.0	91.9	92.1	90.9	90.1	90.6
December	103.6	112.5	98.0	100.6	98.3	106.3	95.0	101.2	92.7	96.9	94.2	98.9
1926												
March	103.1	111.7	105.2	105.8	96.3	103.8	88.2	90.1	96.1	100.2	98.3	102.9
June	102.5	110.8	93.7	100.0	104.0	112.4	86.7	88.6	92.1	94.7	94.8	100.3
September	104.0	110.8	100.3	102.5	103.6	108.1	85.1	89.1	91.3	91.3	96.4	99.3
December	106.1	116.3	97.0	103.5	96.4	104.8	86.3	89.8	82.6	82.3	101.0	109.7
1927												
March	104.4	114.2	105.0	110.0	94.8	102.8	83.5	82.1	86.3	91.3	102.5	111.4
June	102.4	111.0	90.3	100.0	99.0	105.6	84.6	87.8	85.1	85.8	98.7	104.9
September	103.4	111.7	93.8	98.5	95.0	99.4	87.8	91.4	81.7	81.6	91.4	93.2
December	105.4	117.0	90.4	98.2	88.8	94.7	84.5	87.9	77.5	80.8	90.4	99.8

Source: Bureau of Labor Statistics, Department of Labor.

Table 35.—Indexes of Employment and Pay Roll Totals in Leading Individual Manufacturing Industries

[Monthly average 1923=100. Figures represent number on pay roll and amount of pay roll for one week of each month]

Yearly average and month	Slaughtering and meat packing		Cotton goods		Woolen and worsted goods		Iron and steel		Foundry and machine-shop products		Boots and shoes	
	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll
1923 average	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1924 average	93.7	94.4	83.0	80.7	91.0	90.1	93.5	93.9	80.6	78.8	91.4	87.9
1925 average	85.0	86.7	84.0	81.9	88.9	87.2	95.9	99.1	80.7	81.8	92.6	88.6
1926 average	81.4	84.5	83.1	81.0	80.3	78.9	97.9	102.8	86.7	90.3	90.0	85.5
1927 average	81.0	84.4	87.3	87.9	80.0	79.4	91.0	93.9	81.3	83.5	87.9	83.4
December, 1926	84.4	88.9	85.6	86.6	85.4	87.1	94.7	101.3	85.3	89.9	89.5	82.4
1927												
March	79.2	80.6	87.8	90.4	82.1	80.7	95.6	104.0	86.3	91.8	91.2	88.3
June	83.6	87.6	87.6	88.5	78.2	77.5	92.3	97.0	82.3	85.4	84.4	79.9
September	80.1	83.8	87.5	88.1	78.9	78.6	88.7	88.2	79.0	78.5	92.0	91.9
December	82.4	86.8	86.2	86.0	80.1	80.5	84.7	86.9	74.9	76.7	81.0	70.5

Yearly average and month	Paper and pulp		Printing, newspaper		Petroleum refining		Automobiles		Car building and repairing steam railroad		Electrical machinery, apparatus, and supplies	
	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll	Employed	Pay roll
1923 average	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1924 average	94.3	96.8	104.1	106.1	92.1	89.8	93.6	91.1	85.5	85.0	93.8	97.7
1925 average	94.4	99.2	106.7	110.1	94.3	93.2	106.5	111.3	81.3	82.2	90.9	95.0
1926 average	95.6	102.5	111.8	118.3	100.3	97.9	107.6	108.7	80.8	82.7	98.7	103.1
1927 average	93.3	99.0	115.6	123.7	94.9	93.6	98.2	98.2	72.9	76.3	93.8	98.7
December, 1926	94.4	102.8	116.1	124.9	101.1	99.6	90.1	81.8	77.9	82.3	99.0	105.4
1927												
March	94.3	102.0	115.8	122.9	103.0	103.3	106.1	112.6	73.9	77.9	93.8	100.4
June	92.0	97.0	115.3	123.3	96.2	97.9	101.6	96.4	74.7	78.8	94.8	101.7
September	93.3	96.7	114.0	122.9	91.1	88.5	96.2	94.5	72.0	72.8	93.9	94.3
December	92.3	99.9	118.3	129.2	84.1	83.6	91.0	93.8	68.2	71.9	92.0	98.2

Source: Bureau of Labor Statistics, Department of Labor.

Changes in Factory Employment Since 1919.

As previously pointed out, changes in employment and pay rolls over a long period of time can be accurately indicated only if data for new establishments are included from time to time, as in a complete census. The United States Census of Manufactures, taken formerly every five years and since 1919 biennially, is the most complete and satisfactory measure of changes in total factory employment. The census figures have also been used (more or less completely) to adjust the current indexes of employment compiled by various States as well as that prepared by the Federal Reserve Board, which otherwise is based on the same original data as the Department of Labor index except for the exclusion of a few industries, particularly shipbuilding. (Table 36.) The latest census figures thus far published relate to 1925,

According to the census, employment in 1923 was more than 2 per cent smaller than in 1919, but this decline was confined largely to the shipbuilding industry. Shipbuilding was abnormally expanded in 1919, and being an industry closely allied with construction many of its employees were later absorbed in construction work rather than by other manufacturing industries.

Decreased employment was reported by the census for 1925 as compared with 1923 in the railroad equipment factories and railroad repair shops, in textile mills and in foundries and machine shops, and in a large number of less important industries. The increased efficiency of labor and of plants explains the discrepancy between this decline and the gain in production during this period. Total payments to wage earners were slightly smaller in 1925 than in 1923 on the basis of census returns, but were larger than in 1919, especially when shipbuilding is excluded.

A comparison of changes in employment calculated from the census statistics with those of the indexes of the Department of Labor, Federal Reserve Board, and various State labor bureaus is shown in Table 36. To facilitate comparison, all changes are expressed as index numbers, using the same base year (1923 taken as 100). It is worthy of note that the indexes, calculated from the census data, for both employment and pay rolls show greater increases from 1921 to 1923 and less marked declines from 1923 to 1925 than any of the other indexes except those for Wisconsin.

Table 36.—Annual Average Indexes of Employment of Labor and Pay Roll in Manufacturing

[Base 1923=100 (recalculated from varying bases in original sources). The indexes of certain series for 1914 are omitted as incomparable; census data are available only for years shown]

Source	1914	1919	1920	1921	1922	1923	1924	1925	1926	1927
EMPLOYMENT										
Census, average number of wage earners, United States	78.6	102.5	-------	79.1	-------	100.0	-------	95.6	-------	------
Same, excluding shipbuilding	78.6	98.8	-------	78.5	-------	100.0	-------	95.7	-------	------
Federal Reserve Board, United States	-------	96.2	99.2	78.9	86.9	100.0	91.3	91.7	91.9	88.4
Department of Labor, United States (unadjusted)	-------	108.2	109.9	85.1	88.4	100.0	90.3	91.2	91.9	88.5
New York (State bureau)	86.2	103.4	106.9	83.6	90.5	100.0	91.4	90.5	90.5	87.3
Massachusetts (State bureau)	93.3	109.7	107.0	89.0	94.2	100.0	85.1	86.0	84.7	80.0
Wisconsin (State bureau)	-------	109.7	108.9	75.8	86.3	100.0	94.4	98.4	99.2	94.4
PAY ROLL										
Census, total wages paid, United States [1]	36.9	95.0	-------	74.5	-------	100.0	-------	97.5	-------	------
Same, excluding shipbuilding [1]	36.9	90.3	-------	73.7	-------	100.0	-------	97.7	-------	------
Federal Reserve Board, United States	-------	88.3	109.1	73.9	78.8	100.0	92.0	94.7	96.3	92.8
Department of Labor, United States	-------	103.6	125.9	80.0	79.9	100.0	90.6	93.6	95.8	92.4
New York (State bureau)	39.4	89.4	110.6	79.1	83.1	100.0	92.5	93.7	96.9	93.3
Wisconsin (State bureau)	-------	105.2	126.7	70.7	77.8	100.0	97.0	105.6	104.4	97.4

[1] Figures for 1914 and 1919 are not strictly comparable with later years because of the inclusion in the earlier years of establishments with products valued at less than $5,000, as a separate tabulation was not made for wages by value of product groups. The increase from 1914 and 1919 to 1923 and 1925 was actually somewhat greater than these figures indicate.

RAILROAD AND FARM EMPLOYMENT

The number of railroad employees was smaller in each month of 1927 than in the corresponding month of 1926; the decreases were most marked in the fall months when the peak traffic loads were being moved. The average number of employees was 1,737,000, which was about 2½ per cent less than in 1926 and was slightly smaller than in either 1924 or 1925. The total decrease in employment as compared with 1923 amounts to about 6½ per cent notwithstanding a decided expansion in traffic. (For further information upon this subject, see section on Transportation and Communication.)

Comprehensive figures on the employment of farm labor are available only once a year and are expressed as ratios of supply and demand. The Department of Agriculture collects, as of April 1 each year, reports based upon the private opinion of expert observers throughout the country as to the percentage of normal which both supply of farm labor and demand for farm labor represent. By dividing one percentage by the other a rough indication of the relation of supply to demand is obtained.

For the country as a whole the farm labor supply on April 1, 1928, was reported as 95.2 per cent of normal, which was larger than in any year since 1922. The demand for farm labor was about the same as on April 1, 1927, so that the ratio of supply to demand increased and was larger than in other recent years except 1921 and 1922.

Table 37.—Farm Labor Supply and Demand: Condition on April 1

Item	1921	1922	1923	1924	1925	1926	1927	1928
Farm labor supply.....per cent of normal	95.5	99.7	84.2	84.1	90.0	89.2	90.8	95.2
Farm labor demand.....do	87.3	88.8	93.6	90.6	90.4	91.0	88.6	88.6
Supply as a percentage of demand	109.4	112.3	90.0	92.8	99.5	98.1	102.5	107.5

Source: Bureau of Agricultural Economics, Department of Agriculture.

IMMIGRATION AND EMIGRATION

Changes in the volume of immigration and emigration affect the labor supply and consequently have some influence on the general industrial situation, but in view of the restrictions imposed by recent laws it is no longer possible to discern any important parallel between changes in the general activity and prosperity of industry and the number of immigrants. Since July 1, 1924, the permissible number of immigrants, except from North and South America, has been limited to 2 per cent of the number born in the given country of origin who were resident in the United States since 1890—certain relatives and minor classes being exempt from the limitation. There

was a similar but much less drastic limitation in effect from 1921 to 1924.

The total number of immigrants admitted in the calendar year 1927 was about 324,000, which was 4 per cent less than in 1926. (Table 38.) Departures of aliens increased by almost 2,000 and the net immigration was about 5½ per cent less than in 1926.

Table 38.—Immigrant Aliens Admitted and Emigrant Aliens Departed

Years ended June 30	Admissions	Departures	Excess of admissions	Calendar years and periods	Admissions	Departures	Excess of admissions
1910–1914, total	5,174,701	1,442,892	+3,731,809	1926			
1915–1919, total	1,172,679	618,223	+554,456	January–June	160,340	30,400	+129,940
1920–1924, total	2,774,600	892,984	+1,881,616	July–December	175,955	42,779	+133,176
1921	805,228	247,718	+557,510	Total	336,295	73,179	+263,116
1922	309,556	198,712	+110,844				
1923	522,919	81,450	+441,469	1927			
1924	706,896	76,789	+630,107	January–June	159,220	30,587	+128,633
1925	294,314	92,728	+201,586	July–December	164,665	44,535	+120,130
1926	304,488	76,992	+227,496				
1927	335,175	73,366	+261,809	Total	323,885	75,122	+248,763

Source: Reports of the Commissioner General of Immigration, Department of Labor.

Immigration from Europe, which constitutes about one-half of the total admissions, decreased slightly in the calendar year 1927, while immigration from Canada and Newfoundland showed a much more pronounced decline, being 17 per cent less than in 1926. Immigration from other sections of North and South America increased, however, and was larger than in any of the three preceding calendar years.

Table 39.—Immigrant Aliens Admitted and Emigrant Aliens Departed, by Region of Last or Future Permanent Residence

Year	From or to Europe		From or to Canada and Newfoundland		From or to other North and South America		From or to other countries	
	Admissions	Departures	Admissions	Departures	Admissions	Departures	Admissions	Departures
FISCAL YEAR								
1910–1914, total	4,524,169	1,176,037	329,316	195,872	177,366	34,056	143,850	36,927
1920–1924, total	1,787,303	758,619	526,853	22,980	357,136	58,062	103,308	53,323
1923	307,920	61,656	117,011	2,775	82,976	8,849	15,012	8,170
1924	364,339	58,988	200,690	2,601	118,223	7,630	23,644	7,570
1925	148,366	75,064	102,753	2,580	38,743	8,981	4,452	6,103
1926	155,562	60,040	93,368	2,456	51,025	9,029	4,533	5,467
1927	168,368	55,402	84,580	2,440	77,292	8,863	4,935	6,661
CALENDAR YEAR								
1924	108,834	73,036	160,181	2,524	73,753	7,977	12,002	6,584
1925	158,394	63,846	87,696	2,629	40,538	9,349	4,097	5,865
1926	165,171	56,604	96,275	2,196	69,740	8,335	5,109	6,044
1927	162,103	55,370	79,602	3,089	77,656	9,681	4,524	6,982

Source: Reports of the Commissioner General of Immigration, Department of Labor.

All of the immigrants admitted since 1910 are classified by occupational groups in Table 40. Over one-half of the total immigration, excluding those having no occupation, in the fiscal years 1910–1914 were unskilled workers, but this proportion was reduced in each of the two following five-year periods. Since 1925, however, there has been some increase in the proportion of unskilled workers, which amounted to 36 per cent of all occupations in the fiscal year 1926–27. The proportion of professional men and of skilled workers has been considerably larger than in 1910–1914 throughout the postwar period, but has shown comparatively little change in recent years.

Table 40.—Immigrant Aliens Admitted—Occupational Groups

Occupation	Fiscal year ended June 30—					
	1910–1914, total	1915–1919, total	1920–1924, total	1925	1926	1927
All occupations	**5,174,701**	**1,172,679**	**2,774,600**	**294,314**	**304,488**	**335,175**
Professional	62,124	41,308	79,309	10,481	10,861	11,542
Skilled	747,794	198,985	510,236	51,278	56,827	61,733
Unskilled	2,882,435	417,805	954,418	93,295	102,791	121,285
Farmers	56,788	27,638	74,973	13,875	9,720	10,324
Farm laborers	1,257,060	82,251	111,583	16,022	17,390	23,698
Common laborers	953,421	188,192	466,575	34,784	43,543	53,850
Servants	604,967	115,010	288,109	26,924	30,587	31,344
Other unskilled	10,199	4,714	13,178	1,690	1,551	2,069
Commercial	72,572	35,926	59,924	5,919	5,801	6,116
Miscellaneous	55,279	49,254	95,895	14,597	13,301	8,938
No occupation (including women and children)	1,354 497	429,401	1,074,818	118,744	114,907	125,561

Source: Reports of the Commissioner General of Immigration, Department of Labor.

HOURS OF LABOR, WAGES, AND EARNINGS

Changes in Annual Earnings Per Worker.

The average earnings per worker in the United States showed a rather steady upward trend during the first quarter of the present century. There was a consistent upward movement from 1899 to 1914, a sharp advance during the years of the World War which was approximately equal to the increase in cost of living, and a more moderate rise in the period since 1921. Average earnings of all wage earners in factories as compiled by the Census of Manufactures are shown in the following table:

Year	Average earnings per factory worker	Year	Average earnings per factory worker
1899	$426	1919	$1,163
1904	477	1921	1,181
1909	518	1923	1,254
1914	590	1925	1,280

The annual average earnings of factory workers in 1925 were just about three times as large as in 1899 and 10 per cent higher than during the postwar boom in 1919.

Changes in earnings of railroad workers have been somewhat similar to those shown by manufacturing industries. The average annual earnings of all railroad employees in the fiscal year 1899–1900 were $567, and advanced to $808 in the year 1913–14. The average earnings per worker for Class I railroads, excluding switching and terminal companies, are shown for each calendar year since 1919 in the following table:

Year	Average earnings per railroad worker	Year	Average earnings per railroad worker
1919	$1,486	1924	$1,613
1920	1,820	1925	1,640
1921	1,666	1926	1,656
1922	1,623	1927	1,676
1923	1,617		

There was a large increase in wage rates of railroad employees in 1920. This was followed by some reduction in wage rates and by the elimination of much overtime pay in the years 1921 and 1924. Since 1924, however, earnings of railroad workers have shown a steady advance and were higher in 1927 than in any previous year except 1920.

Average Weekly Earnings per Capita.

Although hours of labor were reduced before and during the war, the working time in factories has varied little in the past seven years, according to the index compiled by the National Industrial Conference Board from data for 1,678 manufacturing plants. Actual hours worked, which vary from the total working time on account of part-time or over-time employment of some of the force, averaged about 1 per cent less in 1927 than in either 1925 or 1926 but were greater than in 1924.

Average weekly earnings in factories, according to the National Industrial Conference Board, were about the same in 1927 as in the preceding year, although earnings of unskilled male workers showed a moderate increase. Earnings in 1927 were the highest since 1920 except for women, whose earnings were larger in 1923. The average weekly earnings of unskilled male workers have increased in each year since 1921, showing a total advance of almost 20 per cent. In 1920 earnings were considerably larger than in any of the more recent years for all groups, owing to the high prices which then prevailed. Weekly earnings of all classes of workers according to this index, have more than doubled since 1914.

Reports of State labor bureaus on factory earnings in Massachusetts and New York showed that the average earnings in 1927 were

higher than in any preceding year. Earnings in Illinois averaged the same as in 1926, while there was a slight decrease in earnings for Wisconsin.

Wage rates (as distinguished from earnings) of common road labor averaged exactly the same in 1927 as in 1926, but were higher than in any other year since 1920. Road labor wages decreased in the early part of the year, advanced during the summer, and showed another decrease in the fall. Wage rates of labor engaged in road building at the end of the year were considerably lower than at the end of 1926 in the Middle Atlantic and South Atlantic States, but were higher in most other sections of the country.

Table 41.—Indexes of Hours and Earnings of Labor in Factories and of Wages of Common Labor on Roads

[Indexes based on monthly average for 1914 taken as 100 except for Illinois, where base period is last half of 1922; for Wisconsin, first quarter of 1915; and for common road labor, the year 1915]

Year or month	Index of average hours worked (1,678 plants) 1914=100		Index of average weekly earnings (1,678 plants) 1914=100				Index of average weekly earnings in specified States				Wages, common road labor [1]
	Nominal operation	Actual operation	All workers	Male, skilled	Male, unskilled	Women	Massachusetts	New York [2]	Illinois [3]	Wisconsin	United States
1920	[4] 91	[4] 95	[4] 235	[4] 235	[4] 253	[4] 233	227.6	226	-------	254	245
1921	90	88	188	188	191	205	196.8	206	-------	202	180
1922	[5] 91	[5] 96	[5] 192	[5] 194	[5] 192	[5] 204	196.6	201	100	196	160
1923	91	96	211	213	211	223	229.9	218	110	218	190
1924	90	91	210	212	213	215	229.4	222	112	223	190
1925	91	94	215	218	221	220	229.4	226	113	233	190
1926	91	94	217	220	224	220	230.7	233	116	233	195
1927	90	93	217	220	228	221	232.9	235	116	230	195
1923											
March	91	97	204	208	201	218	215.1	216	104.6	210.4	165
June	91	96	216	218	216	229	216.6	223	114.7	225.6	195
September	90	93	213	215	216	225	220.7	220	112.3	221.2	200
December	90	93	215	214	213	222	218.9	224	114.4	221.7	200
1924											
March	91	93	214	213	221	222	236.3	226	111.8	230.8	205
June	91	88	203	213	214	203	235.6	218	110.9	218.5	195
September	90	90	207	210	211	218	231.1	225	110.1	218.2	195
December	91	91	214	216	215	219	227.4	226	114.8	229.1	185
1925											
March	91	94	217	220	223	225	231.7	228	112.1	231.7	190
June	91	92	211	216	217	216	231.2	224	113.8	232.4	190
September	91	94	215	218	219	217	231.0	227	107.6	231.1	190
December	91	95	219	223	225	[illegible] 2	225.7	233	116.4	235.2	190
1926											
March	91	95	219	225	226	[illegible] 1	231.8	233	116.1	241.9	195
June	91	91	216	222	225	[illegible] 18	232.3	232	117.5	236.6	190
September	90	94	218	222	224	[illegible] 21	234.6	235	113.2	229.3	195
December	90	93	216	217	220	[illegible] 21	229.9	236	116.9	223.0	200
1927											
March	90	94	220	222	233	223	228.3	239	116.3	233.8	195
June	90	93	218	222	229	222	233.3	234	118.5	235.1	195
September	90	93	218	220	227	221	234.2	237	111.9	229.4	200
December	90	92	215	218	225	221	234.9	237	114.0	227.8	195

[1] Compiled by Bureau of Public Roads, Department of Agriculture; since January, 1922, relates exclusively to labor on Federally aided roads.
[2] The base upon which the index numbers are calculated is an average of June to December, 1914.
[3] Relative to last 6 months of 1922.
[4] Average of last 7 months of the year.
[5] Average of last 6 months of the year.

Source: Department of Commerce, Survey of Current Business, which lists original sources.

The Department of Labor does not compute from its statistics of employment and pay-roll payments a consecutive index of average per capita weekly earnings, but percentages of change are calculated for identical establishments as compared with a month previous and a year previous. Per capita earnings for all industries combined were higher in each of the months, February to July, 1927, than in the corresponding months of 1926. In each of the last five months of the year, on the other hand, per capita earnings were smaller than in the corresponding months of 1926.

Union Scales of Wages.

The combined index of union wage rates compiled by the Department of Labor, as of May 15 each year, showed that in May, 1927, the hourly rate was almost 160 per cent greater than in 1913. (Table 42.) As compared with May, 1926, there was an increase of nearly 4 per cent in the average hourly wage rate, which was accompanied by a slight further decrease in the full-time hours per week. In 1927 the wage rates, both weekly and hourly, were the highest ever recorded and full-time working hours were the lowest. This index, which represents the minimum rate specified in agreements between trade unions and employers, covers only a few branches of industry, chiefly the building trades and printing trades, although formerly the metal trades were also well represented. Since wages in the building industry have moved differently from those in other industries, being depressed in the war years and advancing more rapidly than other industries during the recent expansion in construction, this index is hardly typical of wage changes for all skilled labor.

Table 42.—Index Numbers of Union Wage Rates and Hours of Labor in the United States as of May 15

[1913=100]

Year	Index numbers			Year	Index numbers		
	Rate of wages per hour	Full-time hours per week	Rate of wages per week, full time		Rate of wages per hour	Full-time hours per week	Rate of wages per week, full time
1907	89.7	102.6	91.5	1918	132.7	97.0	129.6
1908	91.0	102.1	92.5	1919	154.5	94.7	147.8
1909	91.9	101.9	93.3	1920	199.0	93.8	188.5
1910	94.4	101.1	95.2	1921	205.3	93.9	193.3
1911	96.0	100.7	96.5	1922	193.1	94.4	183.0
1912	97.6	100.3	97.7	1923	210.6	94.3	198.6
1913	100.0	100.0	100.0	1924	228.1	93.9	214.3
1914	101.9	99.6	101.6	1925	237.9	93.0	222.3
1915	102.8	99.4	102.3	1926	250.3	92.8	233.4
1916	107.2	98.8	106.2	1927	259.5	92.4	240.8
1917	114.2	98.4	112.4				

Source: Bureau of Labor Statistics, Department of Labor.

The hourly wage rates for the principal occupations making up this index are given in Table 43. Bakers, job-press assistants and feeders, and hod carriers have had the greatest increases since 1913

of the occupations listed, while various newspaper-printing occupations made the smallest relative gains. With the exception of parquetry-floor layers, newspaper machine operators (on piece work basis), longshoremen, and granite and stonecutters, all occupations listed showed increases in hourly rates over 1926. Most of the increases in wage rates during the year ending May, 1927, were smaller than in the preceding year, and the only occupation for which the increase exceeded 10 per cent was fresco painting.

Table 43.—Average Union Wage Rates Per Hour, and Index Numbers of Hourly Rates, in Specified Trades, as of May 15

Trade	Average rate of wages per hour			Index, rates of wages per hour, 1913=100; 1927
	1922	1926	1927	
Bakers	$0.891	$0.925	$0.957	286.8
BUILDING TRADES				
Bricklayers	1.164	1.565	1.603	231.9
Building laborers	.714	.851	.854	255.8
Carpenters	.973	1.267	1.311	246.7
Parquetry-floor layers	1.254	1.439	1.422	250.2
Engineers, portable and hoisting	1.033	1.336	1.379	224.2
Hod carriers	.721	1.002	1.026	280.4
Painters:				
Building	1.009	1.305	1.345	265.4
Fresco	1.074	1.199	1.335	245.1
Sign	1.231	1.523	1.566	247.2
Plasterers	1.173	1.595	1.628	241.0
Plasterers' laborers	.792	1.058	1.068	259.7
Plumbers and gas fitters	1.043	1.381	1.409	227.2
Stonemasons	1.097	1.545	1.563	256.0
Structural-iron workers	1.036	1.358	1.464	235.5
PRINTING AND PUBLISHING, BOOK AND JOB				
Bookbinders	.855	.975	.996	246.0
Compositors	1.001	1.085	1.105	246.6
Electrotypers	-------	1.209	1.223	255.2
Machine operators, time work	1.062	1.121	1.162	223.0
Press assistants and feeders	.781	.827	.837	285.3
Pressmen, cylinder	$1.052	$1.119	$1.211	230.8
Pressmen, platen	.859	.932	.941	258.3
PRINTING AND PUBLISHING, NEWSPAPERS				
Compositors, daywork	1.013	1.120	1.149	201.8
Machine operators, daywork:				
Piecework	[1].139	[1].154	[1].150	134.9
Timework	1.031	1.135	1.176	208.9
Machine tenders (machinists), day work	1.064	1.089	1.144	194.4
Machinist operators, daywork	1.007	1.038	1.070	177.2
Pressmen, web presses, daywork	.871	1.013	1.066	223.3
Stereotypers, daywork	.922	.992	1.007	191.0
MISCELLANEOUS				
Chauffers	.574	.657	.703	242.1
Teamsters and drivers	.590	.673	.706	269.1
Freight handlers, longshoremen	.722	.835	.817	236.7
Granite cutters	1.089	1.250	1.242	242.6
Stonecutters	1.151	1.404	1.400	241.2

[1] Rate per 1,000 ems.

Source: Bureau of Labor Statistics, Department of Labor.

Other Indexes of Wage Rates.

While no comprehensive index of wage rates for manufacturing as a whole is available, data for several individual industries are compiled by the Department of Labor, usually at intervals of two years. (Table 44.) The hourly wage rates in 1926 (the latest year for which data are available) were from two to three times as great as in 1913 except for tin-plate mills and sheet mills in the steel industry. Ex-

cept for these two industries and lumber for which the latest data cover 1925, the hourly rates have increased far more than the cost of living. The men's clothing industry showed the greatest gain over 1913 in hourly wages, closely followed by open-hearth furnaces. The last named was the only industry which showed an increase in money wage rates for 1926 over 1920, since which year there has been a decline of 15 per cent in the cost of living index of the Department of Labor. (See p. 82.) Wages in the cotton-goods industry have shown the greatest decline since 1920. The increased proportion of cotton-goods workers in the Southern States, where wages are comparatively low, accounts for much of the decrease in this industry. As compared with 1924, decreases of from 6 to 12 per cent were reported for 1926 in hourly wage rates in cotton mills, woolen mills, tin-plate mills, puddling mills, and sheet mills, while smaller declines occurred in men's clothing establishments and blast furnaces. Increases of from 7 to 9 per cent over 1924 were shown by hosiery and underwear factories, open-hearth furnaces, and plate mills, with smaller increases in shoe factories, bar mills, Bessemer converter plants, blooming mills, and rail mills.

Table 44.—Indexes of Wages Per Hour for Specified Industries

[1913=100]

Industry	1910	1913	1914	1915	1916	1918	1919	1920	1922	1924	1926
Textile industries:											
Cotton-goods manufacturing	88	100	103	------	121	180	------	324	223	251	222
Men's clothing industry	[1] 87	100	100	------	------	------	174	------	283	296	292
Woolen goods	90	100	103	------	127	193	------	355	268	301	277
Hosiery and underwear	82	100	104	------	------	------	183	------	213	246	267
Boot and shoe industry	92	100	101	------	108	140	------	232	208	214	219
Iron and steel industry:											
Blast furnaces	([2])	100	100	101	------	------	([2])	279	194	254	252
Open-hearth furnaces	([2])	100	100	104	------	------	([2])	283	203	268	286
Bar mills	([2])	100	97	92	------	------	([2])	248	169	203	205
Tin-plate mills	([2])	100	102	103	------	------	([2])	228	156	191	169
Bessemer converters	([2])	100	90	93	------	------	([2])	238	165	220	226
Puddling mills	([2])	([3])	100	96	------	------	([2])	270	151	220	200
Blooming mills	([2])	100	102	101	------	------	([2])	249	178	231	237
Plate mills	([2])	100	101	106	------	------	([2])	263	187	220	238
Standard-rail mills	([2])	100	99	97	------	------	([2])	249	185	226	234
Sheet mills	([2])	100	101	93	------	------	([2])	215	144	167	157
Lumber industry	97	100	------	91	------	------	194	[4] 166	[4] 180	[4] 178	([3])

[1] Data is for 1911.
[2] Data for 1910 and 1919 not comparable with other years.
[3] Data not collected.
[4] Data represent 1921, 1923, and 1925, respectively.
Source: Bureau of Labor Statistics, Department of Labor.

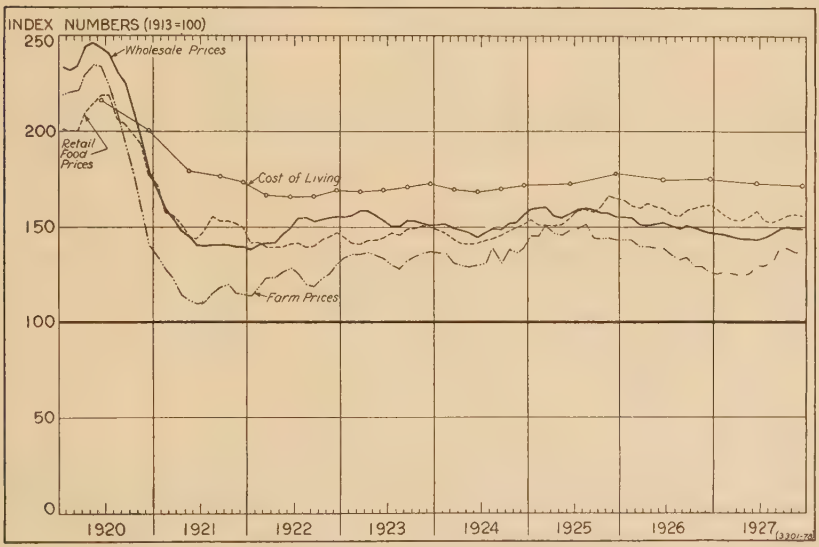
Farm Wages.

Farm-wage data compiled by the Department of Agriculture show an increase in 1927 of about 60 per cent over 1913. Wages on the farms averaged slightly lower than in 1926, but were higher than in any other year since 1920. Farm wages are affected by seasonal conditions and are usually highest in the fall, at the peak of crop harvesting. Further information in regard to farm wages is given in the section on Agricultural Products on p. 194.

WHOLESALE, RETAIL, AND FARM PRICES

SUMMARY.—Wholesale, retail, and farm prices all averaged lower in 1927 than in either 1925 or 1926. Wholesale prices in fact were at about the same low level as in 1921, but farm prices and the cost of living were both considerably higher than during the postwar depression. Wholesale prices reached a peak about the middle of 1925 and after declining continuously throughout 1926 reached a low point in the spring of 1927. As a result of an advance in prices of agricultural commodities, the general index moved upward during the third quarter of the year and in December was only about 1 per cent lower than a year earlier. Farm prices showed about the same general trend as

Chart I.—COMPARATIVE MONTHLY INDEXES OF WHOLESALE (OLD BASIS), RETAIL, AND FARM PRICES



wholesale prices, but the advance in the summer months was much sharper, and prices in December averaged 8 per cent higher than at the end of 1926. The cost of living, on the other hand, declined about 2 per cent during 1927.

Wholesale prices showed less variation during 1927 than in the preceding year. The range from the lowest to the highest month was only about 4 per cent in 1927 as compared with 6 per cent in 1926. All of the groups of commodities included in the index except hides and leather products averaged lower than in 1926, though farm products were considerably higher at the end than at the beginning of the year. The advance in prices of hides and leather products between the close of 1926 and the close of 1927 was 16 per cent, and farm prices increased 10 per cent, while fuel and lighting prices showed a decline of 17 per cent. Prices of building materials were also much lower at the end of 1927 than a year earlier, while prices of most of the other groups showed comparatively little change during the year.

Retail food prices declined to a low point in August, but showed some recovery in the last quarter of the year. Retail prices of all other groups of commodities included in the cost-of-living index, except the miscellaneous group, also receded during the year, but the net decreases were comparatively small. It is worthy of note that the decreases in wholesale prices of fuel and lighting and of building materials during 1927 were much larger than decreases in retail prices of the corresponding groups, although this is partly explained by some differences in the constituency of the groups and in the weighting of the commodities included.

Table 1.—Comparative Index Numbers of Wholesale, Retail, and Farm Prices

[1913=100]

Year	Wholesale prices	Retail food prices	Farm prices	Cost of living, total	Year	Wholesale prices	Retail food prices	Farm prices	Cost of living, total
1910	100.9	93.0	103		1920	226.2	203.4	205	208.5
1911	93.0	92.0	95		1921	146.9	153.3	116	177.3
1912	99.1	97.6	99		1922	148.8	141.6	124	167.3
1913	100.0	100.0	100	100.0	1923	153.7	146.2	135	171.0
1914	98.1	102.4	102	103.0	1924	149.7	145.9	134	170.7
1915	100.8	101.3	100	105.1	1925	158.7	157.4	147	175.7
1916	126.8	113.7	117	118.3	1926	151.0	160.6	136	175.2
1917	177.2	146.4	176	142.4	1927	146.8	155.4	131	172.7
1918	194.3	168.3	200	174.4	December, 1926	147.2	161.8	127	175.6
1919	206.4	185.9	209	188.3	December, 1927	149.1	155.9	137	172.0

Sources: Bureau of Labor Statistics, Department of Labor; Bureau of Agricultural Economics, Department of Agriculture. For further explanations see subsequent detailed tables.

Table 2.—Index Numbers of Wholesale, Retail, and Farm Prices, by Months

[Index numbers based on 1913 as 100. An asterisk (*) indicates the minimum and a dagger (†) the maximum month of each year. For available monthly statistics of cost of living see Table 8]

Year	Average	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Wholesale prices: [1]													
1920	226.2	233.2	232.4	234.4	244.6	†246.7	243.3	240.7	231.4	226.2	211.3	196.4	*179.2
1921	146.9	†169.8	160.1	155.4	147.9	145.5	141.6	141.0	141.5	141.5	141.6	140.7	*139.8
1922	148.8	*138.3	141.4	142.2	142.6	147.6	149.6	154.9	155.0	153.3	154.1	155.5	†156.2
1923	153.7	155.8	156.7	158.6	†158.7	156.2	153.5	150.6	*150.1	153.7	153.1	152.1	151.0
1924	149.7	151.2	151.7	149.9	148.4	146.9	*144.6	147.0	149.7	148.8	151.9	152.7	†157.0
1925	158.7	160.0	160.6	†161.0	156.2	*155.2	157.4	159.9	160.4	159.7	157.6	157.7	156.2
1926	151.0	†156.0	155.0	151.5	151.1	151.7	152.3	150.7	149.2	150.5	149.7	148.1	*147.2
1927	146.8	146.9	146.4	145.3	144.2	144.1	*143.7	144.6	146.6	149.3	†150.1	149.5	149.1
Retail food prices:													
1920	203	201	200	200	211	215	†219	219	207	204	198	193	*178
1921	153	†172	158	156	152	145	*144	148	155	153	153	152	150
1922	142	142	142	*139	*139	*139	141	142	*139	140	143	145	†147
1923	146.2	144.4	142.3	*141.9	143.1	143.4	144.3	147.2	146.4	149.3	149.8	†151.1	150.3
1924	145.9	149.1	147.3	143.7	141.3	*141.0	142.4	143.3	144.2	146.8	148.7	150.1	†151.5
1925	157.4	154.3	151.4	151.1	*150.8	151.6	155.0	159.9	160.4	159.0	161.6	†167.1	165.5
1926	160.6	†164.3	161.5	159.9	162.4	161.1	159.7	157.0	†155.7	158.5	160.0	161.6	161.8
1927	155.4	†159.3	156.0	153.8	153.6	155.4	158.5	153.4	*152.5	154.0	156.1	156.5	155.9
Farm prices:													
1920	205	219	221	222	230	†235	234	224	209	194	178	158	*140
1921	116	†135	128	123	115	112	*110	111	116	118	120	116	115
1922	124	*114	118	123	123	127	128	126	120	119	123	126	†131
1923	135	134	136	136	†137	135	133	130	*128	132	134	136	137
1924	134	137	136	131	130	*129	130	132	139	132	138	137	†139
1925	147	146	146	151	147	146	148	149	†152	144	*143	144	*143
1926	136	†143	†143	140	140	139	139	136	†133	134	130	130	*127
1927	131	126	127	126	*125	126	130	130	132	†140	139	137	137

[1] On old basis; see text as to revision.

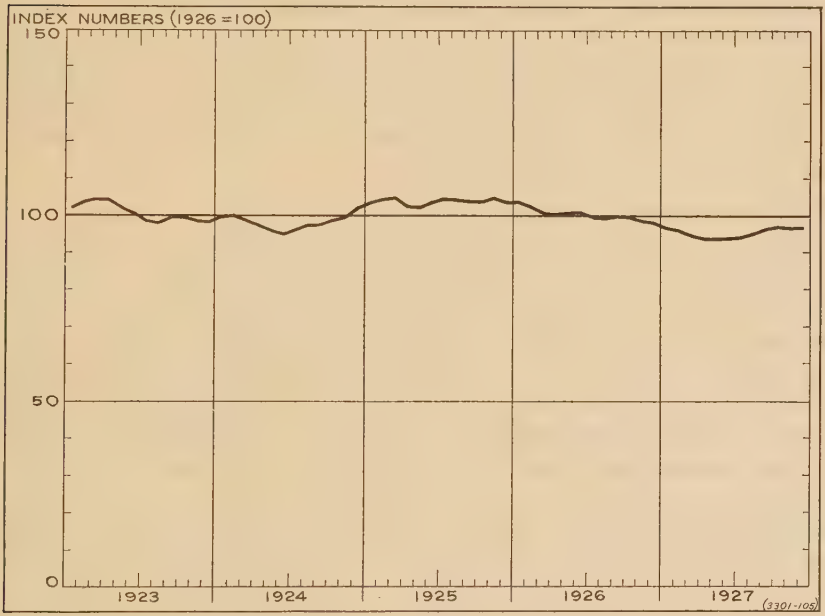
Sources: Bureau of Labor Statistics, Department of Labor; Bureau of Agricultural Economics, Department of Agriculture.

WHOLESALE PRICES

Revision of Index of Bureau of Labor Statistics.

The Bureau of Labor Statistics in September, 1927, issued a revised index of wholesale prices for the United States, adding a number of important articles to the list of commodities included, shifting the price base from 1913 to 1926, and substituting more recent weights for those previously employed. The total number of commodities included in the index was increased from 404 to 550 and most of the additions were manufactured articles, thus tending to eliminate the undue weight given in the old index to crude materials. Some of

Chart II.—REVISED MONTHLY INDEX OF WHOLESALE PRICES



the most important commodities added to the index are automobiles, agricultural machinery, rubber tires, by-product coke, manufactured gas, rayon, mechanical wood pulp, prepared fertilizers, sewing machines, stoves, and various leather manufactures.

The price base was shifted from 1913 to 1926 in order to provide a more up-to-date measure of existing prices. There have been wide fluctuations in the prices of almost all commodities since 1913 as a result of pronounced changes in the relation between the volume of currency (including certain forms of credit) and the volume of goods exchanged. Consequently, the prices of many commodities are far removed from pre-war levels and the relation between certain groups of commodities has been radically altered. Prices of textile products, building materials, and house furnishings, for example, have shown

about twice as large an increase during the past 15 years as prices of metals and chemicals, partly as a result of the great advance in technical methods used in producing the latter commodities. In any one year certain articles are somewhat out of line in their price relationships with other commodities, but in the year 1926 these interrelationships seem to have been relatively normal for most commodities and it is certainly a much better measuring stick for current prices than a year so remote as 1913.

The revised index of wholesale prices is weighted by the production of the various commodities in the years 1923 to 1925 instead of data for the year 1919 which had been previously used. In the case of agricultural products, trustworthy data for 1923, 1924, and 1925 were available and were averaged to make the weights, but for manufactured articles reliable production statistics were not available for all three years, so weights were obtained by averaging data from the census reports of 1923 and 1925. The use of this broader period in calculating weights was a noteworthy improvement in the method of constructing the index.

The General Index of Wholesale Prices.

The new index at the date of writing has only been compiled and published for the period from January, 1923, to date. (Chart II and Table 3.) Prices had been rising throughout 1922 and reached a peak of 105 (1926 taken as 100) in March, 1923. This was followed by a recession in all groups of commodities which averaged about 9 per cent and the index reached a low point of 95 in June, 1924. During the succeeding period of about a year the general index moved upward, as a result of rising prices for farm products, and in July, 1925, once more reached a peak of 105. After a short period of relative stability prices again declined and reached a low point of 94 in April, 1927. Decreases were shown for all groups of commodities, but were particularly marked in the case of crude rubber and rubber products. Prices of most commodities showed little change during the remainder of 1927, but the general index advanced to 97 in October as a result of higher prices for farm products, foods, and hides and leather products. For the entire year 1927 the wholesale price index averaged 95, which was lower than for any of the four preceding years.

Prices by Commodity Groups.

The revised index of the Bureau of Labor Statistics is divided into 10 major groups of commodities. The group entitled "Cloths and clothing" in the old index has been superseded by two groups—"Hides and leather products," and "Textile products." There has, on the whole, been a rather close correspondence in the trends of these various price groups during the past five years, as is indicated

in Chart III and Table 3. Certain groups, however, have shown considerably wider fluctuations than others and there has also been some readjustment in the relative levels of various groups of prices.

Table 3.—Revised Wholesale Price Indexes of Major Commodity Groups

[1926=100]

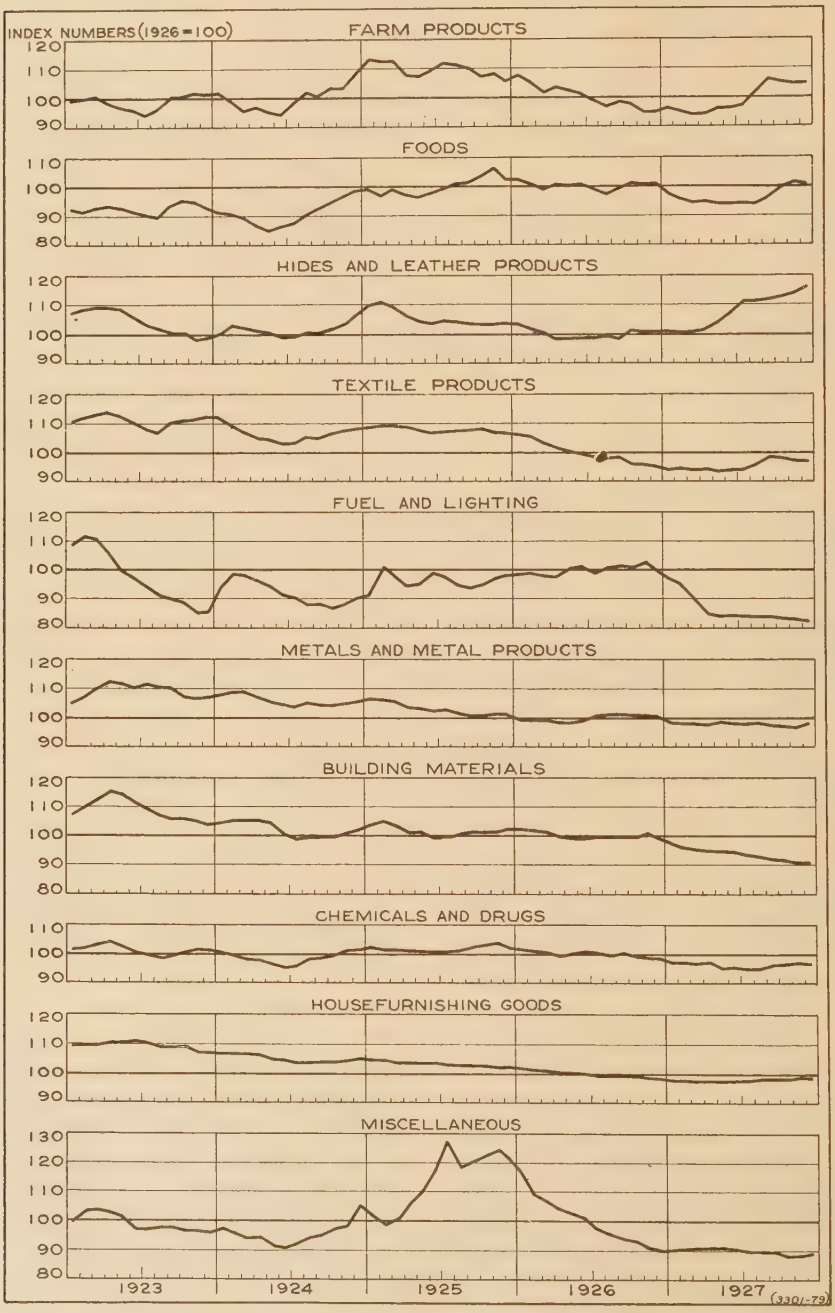
Year, quarter, or month	All commodities	Farm products	Food products	Hides and leather products	Textile products	Fuel and lighting	Metals and metal products	Building materials	Chemicals and drugs	House-furnishing goods	Miscellaneous
1923	100.6	98.6	92.7	104.2	111.3	97.3	109.3	108.7	101.1	108.9	98.8
1924	98.1	100.0	91.0	101.4	106.7	92.0	106.3	102.3	98.9	104.9	95.5
1925	103.5	109.8	100.2	105.4	108.3	96.5	103.2	101.7	101.8	103.1	113.9
1926	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1927	95.4	99.4	96.5	107.9	95.7	86.5	98.2	93.3	96.6	98.2	89.9
1924											
January–March	99.5	98.6	90.5	101.8	109.4	96.9	108.5	105.4	99.4	106.6	95.7
April–June	96.3	95.6	86.2	100.0	104.4	93.9	105.4	103.4	97.0	105.2	92.2
July–September	96.9	100.3	90.2	100.3	104.7	88.6	104.3	99.6	98.0	103.9	93.6
October–December	100.1	105.0	97.1	104.1	107.3	88.4	104.6	100.7	100.8	104.5	100.6
1925											
January–March	104.3	113.0	98.8	110.0	109.1	96.7	106.0	104.1	101.9	104.2	100.3
April–June	102.6	108.1	97.3	104.8	107.7	96.4	103.1	100.7	100.6	103.7	110.9
July–September	104.2	111.2	100.7	104.0	107.4	95.9	101.8	100.3	101.5	102.7	121.5
October–December	103.8	106.8	104.1	103.3	107.7	97.0	101.0	101.6	103.1	102.4	122.6
1926											
January	103.6	107.4	102.6	103.3	106.3	98.7	99.9	102.3	101.6	101.4	116.8
February	102.1	105.1	100.5	101.4	105.2	99.1	99.6	101.8	100.8	101.0	109.0
March	100.4	101.7	99.1	100.1	103.0	98.1	99.3	101.0	100.2	100.9	106.3
April	100.1	102.8	100.4	98.7	101.3	97.7	98.8	100.0	99.9	100.8	103.9
May	100.5	102.4	100.1	98.9	100.1	100.8	98.3	99.1	100.2	100.2	102.5
June	100.5	100.9	100.5	98.8	99.4	101.0	99.1	98.9	100.9	100.0	101.0
July	99.5	98.6	98.8	99.0	98.5	99.5	100.7	99.4	100.4	99.9	97.5
August	99.0	97.2	97.5	99.7	98.5	100.6	101.0	99.5	99.8	99.8	95.4
September	99.7	99.3	99.8	98.8	98.9	101.5	101.2	99.5	100.2	99.5	94.2
October	99.4	97.9	100.8	101.0	97.7	101.3	101.0	99.5	99.1	99.4	93.4
November	98.4	94.7	100.5	100.4	96.3	102.5	100.8	100.1	98.6	99.1	90.8
December	97.9	94.9	100.7	100.4	95.2	99.4	100.4	99.2	98.8	98.8	89.9
1927											
January	96.6	96.5	96.9	101.0	94.3	97.7	98.8	97.5	97.6	97.9	90.3
February	95.9	95.4	95.9	100.2	94.6	95.8	98.0	96.2	97.6	97.9	90.6
March	94.5	94.2	94.5	100.5	94.0	90.0	98.2	95.3	97.1	97.8	90.9
April	93.7	94.3	94.6	101.7	94.2	84.9	97.8	95.0	97.8	97.8	91.3
May	93.7	96.3	94.4	103.7	93.9	83.9	98.6	95.1	95.4	97.8	91.3
June	93.8	96.5	94.4	107.3	94.3	84.2	98.2	94.6	95.8	98.0	90.2
July	94.1	97.6	93.9	111.7	94.3	84.2	97.7	93.7	95.3	98.0	89.3
August	95.2	102.2	94.2	111.7	96.2	84.1	98.0	92.9	95.4	98.6	89.9
September	96.5	105.9	96.5	112.5	98.5	84.2	97.6	92.1	96.4	98.6	89.2
October	97.0	105.0	100.0	113.0	98.4	83.8	97.1	91.6	97.1	98.5	88.3
November	96.7	104.3	101.5	114.3	97.5	82.9	97.0	90.2	97.4	98.9	88.3
December	96.8	104.4	100.7	116.9	97.2	82.5	98.4	90.4	97.2	98.8	89.0

Source: Bureau of Labor Statistics, Department of Labor.

The miscellaneous group, which includes crude rubber and automobile tires, showed the widest fluctuations during the five-year period, declining from a peak of 103 in March, 1923, to a low point of 90 in June, 1924, advancing to 126 in July, 1925, and receding to 88 in October, 1927. Prices of fuel and lighting and of building materials have also had a wide movement, but for both groups the general trend has been downward since early in 1923. Prices of chemicals and drugs have been more stable than those of any other group, showing a range of about 9 per cent from 104 in April, 1923, to 95 in July, 1927.

Chart III.—REVISED MONTHLY INDEXES OF WHOLESALE PRICES, BY MAJOR COMMODITY GROUPS

NOTE.—All scales are broken, therefore do not show zero line. The effect is to exaggerate the magnitude of the fluctuations.



During the period from the beginning of 1923 to the end of 1927, prices of hides and leather products, foods, and farm products have increased, while all other groups of prices have declined. The largest increase was shown by hides and leather products and amounted to 12 per cent, while the greatest decrease was in the average price of building materials, which reached 17 per cent.

Wholesale prices of hides and leather products and farm products advanced sharply in 1927; prices of fuel and lighting and building materials showed marked declines, while prices of all other groups showed relatively small net changes. The stiffening of farm prices in the spring of 1927 was due primarily to higher grain quotations, while the more pronounced advance in the summer resulted from sharp increases in prices of cotton and tobacco. Prices of hides and skins had a sharp upward movement in the second quarter of 1927, and this resulted in a general advance in the prices of leather, shoes, and other leather manufactures in the last half of the year.

Fuel prices, which had risen somewhat in 1926, in consequence of the British coal strike, declined precipitously during the first half of 1927. This slump was owing in part to a slackening of foreign demand for coal, but a more important influence was the sharp drop in prices of petroleum products which resulted from a great expansion in output of crude oil. The decline in building material prices which continued throughout 1927 and extended to practically all types of materials was caused by a moderate recession in the volume of new construction which had been steadily expanding since 1922.

Changes in Prices by Subgroups of Commodities.

The number of subgroups into which the wholesale price index is divided was increased from 28 to 41 as a part of the recent revision. The movement of the subgroup indexes (Chart IV and Table 4) is usually less uniform than that of the main groups. In the five-year period for which the revised index numbers are available most of the subgroups have had several up and down movements, and the net changes in levels which have resulted vary considerably. Prices of grains, livestock, meats, leather, and crude rubber were all more than 10 per cent higher in December, 1927, than five years earlier. Some of the declines shown by subgroups, however, have been of even greater magnitude; net decreases of over 20 per cent are shown for silk and rayon, bituminous coal, coke, petroleum products, lumber, and furniture, while cotton textiles, iron and steel, manufactured gas, brick, structural steel, paint materials, drugs and pharmaceuticals, fertilizer materials, mixed fertilizers, and paper and pulp all showed decreases ranging from 10 to 20 per cent. These movements have substantially improved the exchange value of grain, livestock, meats, and leather in terms of other commodities.

Chart IV.—INDEXES OF WHOLESALE PRICES OF COMMODITY SUBGROUPS

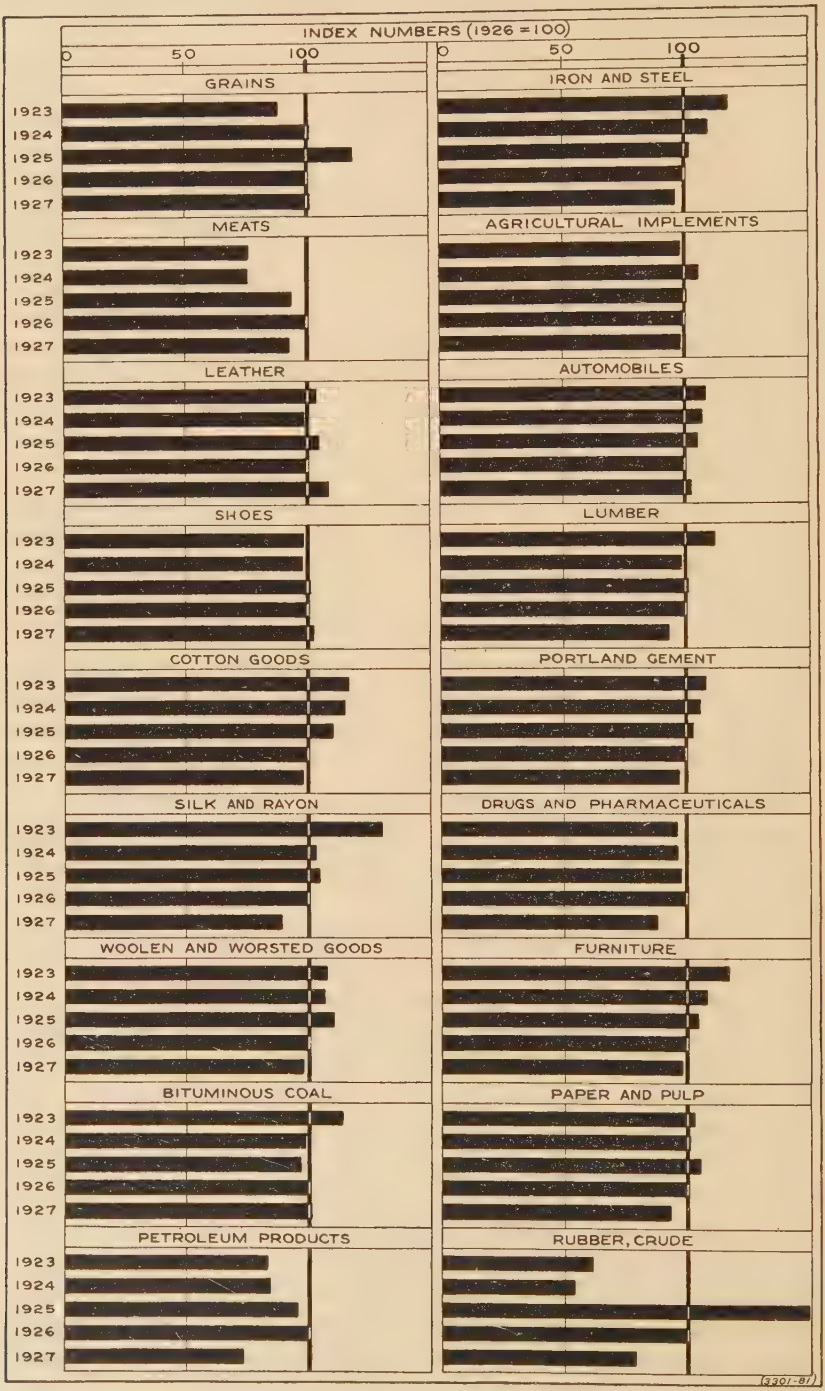


Table 4.—Indexes of Wholesale Prices of Commodity Subgroups

NOTE.—Each of the 10 groups covered by Table 3 is divided into from 2 to 6 subgroups.

[1926=100]

Subgroup	Year					Dec., 1926	Mar., 1927	June, 1927	Sept., 1927	Dec., 1927
	1923	1924	1925	1926	1927					
Grains	88.0	100.6	118.3	100.0	100.9	96.9	93.0	109.7	102.9	102.0
Livestock and poultry	77.7	79.3	98.9	100.0	98.9	93.5	100.6	90.6	104.9	97.9
Other farm products	116.7	114.2	114.5	100.0	99.2	95.2	90.2	95.9	107.6	109.7
Meats	76.2	75.7	93.3	100.0	92.7	98.4	89.9	88.6	92.2	99.6
Butter, cheese, and milk	103.4	94.5	101.1	100.0	104.0	107.4	106.1	97.7	105.6	110.0
Other foods	99.6	100.0	104.5	100.0	96.2	99.6	93.0	97.1	95.8	97.7
Hides and skins	117.6	110.2	118.7	100.0	120.4	103.3	102.3	123.8	128.4	136.4
Leather	104.1	99.8	104.8	100.0	109.2	99.4	100.2	107.6	115.4	122.4
Boots and shoes	99.1	98.4	100.5	100.0	102.5	99.8	99.8	101.0	105.6	107.1
Other leather products	103.8	103.9	104.0	100.0	104.1	100.0	101.2	101.2	104.9	109.4
Cotton goods	116.9	114.7	110.0	100.0	97.9	93.3	92.7	95.1	106.1	103.3
Silk and rayon	129.5	103.1	104.5	100.0	88.1	92.4	90.6	90.3	86.6	83.2
Woolen and worsted goods	107.5	106.8	110.2	100.0	97.6	98.4	98.8	97.1	97.3	98.4
Other textile products	77.4	87.1	104.1	100.0	95.4	99.7	93.5	93.0	95.9	96.7
Anthracite	100.8	98.6	99.7	100.0	96.3	98.8	96.8	94.8	96.5	96.8
Bituminous coal	113.4	99.7	96.5	100.0	100.4	107.9	100.1	100.3	102.4	97.4
Coke	118.8	97.2	97.7	100.0	94.4	103.3	96.0	94.2	94.0	91.9
Manufactured gas	104.8	102.9	101.9	100.0	97.9	98.1	98.1	99.0	98.2	96.2
Petroleum products	82.6	83.5	95.0	100.0	72.7	93.7	80.0	68.0	66.4	66.2
Iron and steel	117.3	109.4	102.2	100.0	95.9	100.0	97.4	96.1	94.7	93.7
Nonferrous metals	95.3	93.0	101.4	100.0	91.8	96.9	95.1	90.0	90.7	92.3
Agricultural implements	98.8	105.7	100.4	100.0	99.2	100.0	99.4	99.4	99.3	98.8
Automobiles	108.7	107.5	105.3	100.0	102.5	102.3	99.8	102.9	102.2	104.6
Other metal products	103.3	101.7	100.5	100.0	100.2	99.4	99.5	100.6	100.7	100.7
Lumber	111.8	99.3	100.6	100.0	92.5	98.9	95.0	94.9	91.0	88.0
Brick	103.6	103.4	100.1	100.0	93.2	97.5	93.6	93.4	93.2	92.2
Portland cement	107.9	105.7	102.6	100.0	96.7	99.4	96.5	96.5	96.5	96.5
Structural steel	123.7	114.2	102.2	100.0	94.7	102.1	97.0	94.5	93.2	91.9
Paint materials	101.3	99.7	109.3	100.0	91.0	97.6	92.5	92.7	90.0	86.5
Other building materials	105.5	104.0	100.4	100.0	94.1	100.1	96.4	94.5	92.3	92.5
Chemicals	100.6	102.2	104.1	100.0	100.0	97.7	97.4	99.9	101.4	102.2
Drugs and pharmaceuticals	95.7	95.8	97.7	100.0	87.3	101.2	88.7	87.7	86.7	81.9
Fertilizer materials	102.5	92.6	98.8	100.0	96.2	99.3	100.1	98.3	92.1	95.0
Mixed fertilizers	107.4	95.9	100.4	100.0	93.0	100.0	100.0	84.8	91.7	95.2
Furniture	116.7	107.9	104.6	100.0	97.6	99.5	97.8	97.8	97.6	97.1
Furnishings	104.8	103.4	102.2	100.0	98.6	98.4	98.8	99.0	99.3	99.8
Cattle feed	118.5	110.2	112.7	100.0	117.8	105.3	110.9	117.8	117.7	128.9
Paper and pulp	102.8	100.7	105.2	100.0	92.2	93.7	92.8	92.0	92.4	90.9
Rubber, crude	61.3	54.3	149.9	100.0	77.9	78.1	84.1	76.1	69.2	84.2
Automobile tires				100.0	76.3	78.6	78.7	78.3	77.4	69.9
Other miscellaneous	102.0	100.8	99.6	100.0	99.9	99.7	100.0	100.6	100.2	98.6

Source: Bureau of Labor Statistics, Department of Labor.

During the first half of 1927 the outstanding changes by subgroups were advances in prices of grain, hides and skins, and cattle feed, and decreases shown by meat, petroleum products, bituminous coal, structural steel, drugs, and fertilizers. In the third quarter of the year grain prices lost about one-half of their previous gain, and prices of silk and rayon, lumber, fertilizer materials, and crude rubber all showed sharp recessions. These were more than offset, however, by increases in prices of livestock, "other farm products," meats, hides, leather, cotton goods, and fertilizers. Prices of silk and rayon and

lumber showed further recessions in the last quarter of the year and prices of livestock, bituminous coal, cotton goods, drugs, and automobile tires were also substantially lower. The meat, hide, leather, and shoe groups, however, continued to advance and cattle feeds had another sharp upward movement.

Prices of Individual Commodities.

The increase in number of fabricated articles included in the index of the Bureau of Labor Statistics makes possible a somewhat more comprehensive study of price movements of individual commodities than in the past. (Table 5.)

Prices of all kinds of grain had sharp advances in the spring of 1927, but these increases were followed by recessions in the summer and early fall. The upward movement was resumed in the fourth quarter and quotations for all the chief grains except wheat were substantially higher in December than a year earlier. Cotton prices, which were at a very low level at the end of 1926, advanced rapidly during the first three quarters of 1927 and after a moderate recession in the fall were 11 per cent higher in December than a year earlier. Tobacco prices showed an even wider movement, declining about 40 per cent in the first half of the year and then advancing in the second half to a peak substantially higher than in 1926.

Livestock prices showed wide differences of movement during 1927. Cattle prices had a particularly marked advance and closed the year about 60 per cent higher than at the end of 1926. The price of lambs moved upward during the first quarter of 1927, but showed comparatively little change during the remainder of the year. Hog prices declined in the spring, rallied in the summer, and receded again in the fall, closing the year with a net loss of 28 per cent. Prices of fresh beef and cured hams showed somewhat similar changes to cattle and hogs, respectively, for the year as a whole. Sugar prices, which have been at a low level for several years, declined in the second half of 1927, and in December were 10 per cent lower than a year earlier. Coffee, on the other hand, declined in the first half of 1927, but had a sharp upward movement in the last quarter of the year.

Hides, leather, and shoes all advanced in 1927, but the gain was much more pronounced in hides and skins than in the case of the highly manufactured products. Packers' hides advanced in each of the last three quarters of the year and in December were 66 per cent higher than a year earlier. Prices of cotton yarn and cotton cloth increased considerably in the first three quarters of the year but receded in the last quarter, reflecting the movement in prices of raw cotton. Rayon prices advanced slightly in the first half of 1927 and remained unchanged in the second half of the year, while the chief change in woolen textiles was an advance in the fourth quarter,

which reflected a rise in the quotations for raw wool. Prices of raw silk, which had been relatively stable in the years 1924 to 1926, receded in each quarter of 1927 and closed the year 14 per cent lower than in December, 1926, and there was a closely parallel movement in prices of silk hosiery.

Prices of bituminous coal and coke decreased about one-tenth during 1927, despite the prolonged strike in the central competitive field, and anthracite showed a more moderate recession. The opening of new oil fields caused a decline of about one-third in the price of crude petroleum during the first half of 1927, which resulted in a corresponding lowering of gasoline quotations. The gradual decline in rates for manufactured gas which has been in evidence since 1923 continued in 1927.

Prices of pig iron and structural steel decreased steadily during 1927, while quotations for steel sheets dropped sharply in the first quarter, recovered in the second quarter, and declined to the low point of the year in December. The chief nonferrous metals decreased in price during the first half of 1927 and prices of tin and zinc continued to recede in the second half, whereas copper prices made a sharp recovery and lead quotations showed a moderate rise.

Price decreases were quite general among the building materials in 1927 and continued throughout the year; quotations for lumber and linseed oil were much lower in December than a year earlier, while cement prices showed a moderate loss. Rubber prices in 1927, as in other recent years, fluctuated very widely, but there was comparatively little net change. Prices of automobile tires, on the other hand, were maintained without change throughout most of 1927, but were reduced about 9 per cent in the last quarter. Prices of newsprint and wrapping paper were very stable, but closed the year lower than at the end of 1926.

Dispersion of Wholesale Prices.

The movement of various groups of wholesale prices has tended to become more uniform in recent years than in the period immediately following the war. In 1927, however, there was considerably more dispersion among the prices of various commodity groups than in 1925 or 1926. Of the 41 subgroups of commodities into which the revised index is divided 19 varied by more than 5 per cent from the average of the entire index. As the base year of the index is 1926, one would not expect a very wide spread between the index numbers for various groups of commodities in 1927. Nevertheless, by December, 1927, the index number for petroleum products had dropped to 66, while the index for hides and skins had advanced to 136. Part of this spread resulted from the fact that the index was based on figures for a single year and in any one-year period prices of some commodities are always out of alignment with the general price level. In 1926,

for example, prices of hides and leather products were relatively low as compared to other recent years, while prices of petroleum products, rubber, and automobile tires were comparatively high.

Table 5.—Indexes of Wholesale Prices of Leading Individual Commodities

NOTE.—Each item represents some specific grade or type of the commodity specified, at some particular market, these having been selected in certain cases from among several grades, types, or markets, quoted by the Bureau of Labor Statistics. For more detail see Statistical Abstract of United States and various tables in this yearbook.

[1926=100]

Commodity	Year					Dec., 1926	Mar., 1927	June, 1927	Sept., 1927	Dec., 1927
	1923	1924	1925	1926	1927					
Wheat, spring	76.1	85.9	106.9	100.0	90.3	90.5	87.5	96.1	87.5	88.4
Wheat, winter	75.9	83.0	114.7	100.0	89.3	91.0	87.1	93.9	85.2	89.8
Corn	110.3	130.1	137.8	100.0	115.7	101.2	91.8	133.2	132.4	115.8
Oats	102.0	119.5	108.6	100.0	115.5	116.9	112.8	116.8	114.2	128.8
Barley	95.0	117.7	121.6	100.0	118.8	107.2	112.0	132.0	119.5	126.3
Rye	78.8	96.0	118.3	100.0	109.6	101.6	104.5	120.2	102.0	114.0
Cattle, steers	104.5	101.5	111.9	100.0	133.2	102.0	125.1	124.2	139.7	162.7
Hogs, light	59.8	64.2	94.1	100.0	80.8	89.4	88.9	69.2	88.7	64.5
Lambs	98.1	104.7	111.1	100.0	101.2	87.9	109.9	96.7	99.0	95.0
Tobacco, leaf	177.7	173.9	164.4	100.0	133.1	148.1	124.2	90.1	184.1	238.7
Cotton, middling	168.7	165.9	137.6	100.0	101.8	72.2	83.1	96.9	127.1	113.6
Wool, scoured	119.8	122.2	120.9	100.0	96.1	95.7	96.4	93.3	97.7	98.6
Beef, fresh carcass	96.3	104.0	109.8	100.0	113.3	103.5	103.5	103.5	116.3	135.8
Pork, cured hams	68.8	65.6	88.0	100.0	79.9	91.0	87.6	80.0	72.9	69.5
Flour, standard patents	75.8	85.3	104.8	100.0	88.2	90.6	86.9	93.9	83.9	84.3
Sugar, granulated	154.0	135.8	99.8	100.0	106.2	111.3	106.2	110.2	106.0	101.3
Coffee, Santos	66.4	95.6	109.7	100.0	83.9	90.0	81.4	75.8	80.0	97.1
Cottonseed oil	95.1	91.0	91.1	100.0	81.8	69.2	80.1	77.5	90.5	84.1
Hides, packers, heavy	118.7	104.7	114.2	100.0	139.0	107.6	99.4	139.0	159.9	178.2
Calfskins	90.7	105.5	116.0	100.0	113.6	96.3	87.7	115.9	121.1	144.2
Leather, sole	116.0	102.4	109.9	100.0	112.5	98.1	98.1	111.8	120.9	134.6
Leather, chrome calf	97.8	100.4	104.1	100.0	107.8	99.3	101.5	105.9	112.5	118.0
Shoes, men's black calf	98.5	99.1	104.2	100.0	100.1	98.5	98.5	98.5	101.6	101.6
Cotton yarn	135.5	132.3	116.7	100.0	98.0	86.7	86.9	96.7	113.2	103.5
Cotton print cloth	143.7	130.7	125.9	100.0	105.4	89.3	93.5	104.8	125.1	109.8
Cotton sheeting, brown	132.1	121.3	112.2	100.0	99.6	85.9	87.2	90.2	118.0	113.1
Worsted yarn	120.5	117.9	119.9	100.0	95.2	95.8	95.8	92.3	95.8	97.5
Women's dress goods, wool	103.4	106.4	109.7	100.0	95.4	96.7	94.3	94.3	94.3	96.7
Suitings, wool				100.0	97.2	95.7	97.3	97.3	97.3	97.6
Silk, raw, Japanese	139.7	100.9	106.1	100.0	87.9	94.1	92.6	88.6	82.3	80.7
Rayon	153.6	113.0	112.0	100.0	85.0	82.7	83.9	85.7	85.7	85.7
Hosiery, women's silk	108.9	98.0	97.3	100.0	90.4	96.6	92.6	92.6	88.6	86.4
Coal, bituminous	112.0	97.6	95.4	100.0	98.8	108.3	99.2	99.0	99.1	96.0
Anthracite	100.9	101.0	100.1	100.0	96.6	100.6	96.9	94.8	97.0	97.2
Coke, by-product	112.3	99.2	99.5	100.0	96.0	105.3	95.8	95.8	95.8	95.8
Gas, manufactured	104.1	102.1	101.8	100.0	97.9	98.1	97.7	98.8	98.2	96.2
Petroleum, crude	76.3	77.0	88.6	100.0	68.2	92.9	70.9	61.3	63.6	64.8
Gasoline, refinery	104.9	95.2	104.5	100.0	71.8	91.5	78.3	70.0	64.1	64.4
Pig iron, foundry	136.6	109.2	105.0	100.0	95.8	99.5	98.3	96.5	93.4	92.2
Steel sheets	116.7	112.6	103.2	100.0	96.2	99.4	93.7	99.4	99.4	93.4
Steel, structural	123.7	114.2	102.2	100.0	94.7	102.1	97.0	94.5	93.2	91.9
Copper, ingots	105.1	94.8	102.0	100.0	93.9	96.6	94.8	89.7	94.1	99.9
Lead, pig	87.7	98.1	107.8	100.0	80.2	93.1	89.4	76.3	74.6	77.2
Tin, pig	65.2	76.7	88.5	100.0	98.5	104.5	106.0	103.0	94.1	89.5
Zinc, slab	90.9	87.0	103.6	100.0	85.6	95.7	91.6	85.5	85.3	78.9
Tractors	92.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Lumber, pine, yellow	107.5	92.7	95.3	100.0	91.4	(1)	(1)	94.9	86.2	89.7
Lumber, Duglas fir	117.8	104.7	104.7	100.0	98.8	102.5	101.9	99.1	99.4	89.8
Brick, common	104.3	103.9	100.7	100.0	100.8	99.6	101.3	100.8	100.4	100.0
Cement, Portland	107.9	105.7	102.6	100.0	96.7	99.4	96.5	96.5	96.5	96.5
Linseed oil, raw	118.7	117.3	124.8	100.0	93.7	96.2	94.0	100.4	92.8	86.1
Sulphuric acid	100.0	97.3	95.9	100.0	104.1	102.7	102.7	102.7	102.7	106.9
Newsprint	112.8	110.7	107.2	100.0	94.2	100.0	94.2	94.2	94.2	94.2
Wrapping paper	85.0	94.7	105.7	100.0	83.7	83.9	83.9	83.9	83.9	82.8
Rubber, crude	63.0	54.2	150.0	100.0	78.2	78.6	84.5	76.2	69.6	84.5
Automobile, tires				100.0	75.3	76.8	76.8	76.8	76.8	69.9
Cylinder oil	84.7	109.3	107.6	100.0	95.2	96.1	94.6	95.6	96.5	92.7

[1] No quotation for month.

Source: Bureau of Labor Statistics, Department of Labor.

The Longer Swing of Prices.

The movement of wholesale prices for the entire period since 1860 is shown in Table 6. For the period from 1860 to 1899, inclusive, five-year average prices are shown which were based on the Aldrich report of 1892. The index numbers which are shown for individual years beginning with 1890 were compiled by the Bureau of Labor Statistics. The year 1913, used as the base for these index numbers, was fairly typical of the period which immediately preceded the war, but the price level at that time was much higher than in the closing years of the last century or the early years of the present century. The general trend of prices was downward from the end of the Civil War, when they had been inflated by large money issues, until about 1897. During the period from 1897 to 1914, when the war started, prices showed a gradual advance as a result of the large production of gold in South Africa and the greatly expanded credit facilities of the large commercial nations. Prices advanced rapidly during the war period and for about a year and a half thereafter, reaching a peak in 1920 which was about three times as high as in 1897. A sharp decline occurred in the latter part of 1920 and prices reached a low point early in 1922. During the past six years the general price level has shown less violent fluctuations and the average for 1927 was almost exactly the same as that for 1921. The price level is still, however, more than twice as high as in 1897 and nearly 50 per cent higher than in 1913. (Chart V).

Table 6.—Indexes of Wholesale Prices—General Average and Major Commodity Groups

[1913=100]

Year	General index	Year	General index	Year	General index	Year	General index	Year	General index
1860–1864	115	1893	79.6	1902	84.4	1911	93.0	1920	226.2
1865–1869	157	1894	68.7	1903	85.5	1912	99.1	1921	146.9
1870–1874	121	1895	70.0	1904	85.6	1913	100.0	1922	148.8
1875–1879	95	1896	66.7	1905	86.2	1914	98.1	1923	153.7
1880–1884	92	1897	66.8	1906	88.6	1915	100.8	1924	149.7
1885–1889	82	1898	69.6	1907	93.5	1916	126.8	1925	158.7
1890	80.5	1899	74.9	1908	90.1	1917	177.2	1926	151.0
1891	80.0	1900	80.5	1909	96.9	1918	194.3	1927	146.8
1892	74.8	1901	79.3	1910	100.9	1919	206.4		

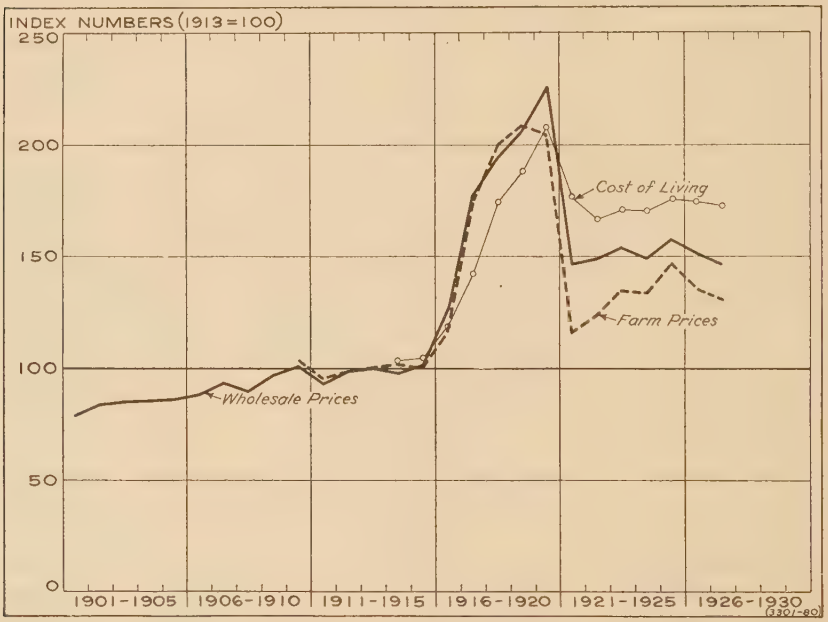
Year	Farm products	Foods	Clothes and clothing	Fuel and lighting	Metals and products	Building materials	Chemicals and drugs	House furnishing goods	Miscellaneous	All commodities
1891–1895	67.4	79.7	85.7	59.3	85.7	72.6	87.7	83.6	92.1	74.0
1896–1900	62.3	73.4	79.1	63.8	88.0	72.5	94.0	79.4	96.8	71.7
1901–1905	78.4	82.5	85.8	84.8	97.6	80.9	105.1	88.4	103.4	84.2
1906–1910	90.7	92.4	98.8	84.7	103.1	95.9	99.0	93.6	122.0	94.0
1911–1915	100.2	101.4	97.8	88.2	94.4	96.4	107.4	97.5	102.3	98.2
1916–1920	195.9	180.6	215.7	177.4	186.7	183.0	193.4	164.3	159.1	186.2
1921–1925	139.9	145.6	188.2	189.4	132.0	174.6	131.1	179.2	123.9	151.6
1926	142.2	152.9	175.9	179.9	126.7	173.4	130.6	161.8	123.9	151.0
1927	143.5	148.9	172.2	162.2	120.3	162.6	121.6	157.7	121.2	146.8

Source: Bureau of Labor Statistics, Department of Labor.

FARM PRICES

The Department of Agriculture compiles each month weighted averages of prices which farmers receive at the farm for 30 of their principal products. Quotations are obtained for use in this index from all parts of the United States which are combined with due weighting into indexes of price movements. The general farm price index is shown in Chart V and Tables 1 and 2 of this section, and the

Chart V.—COMPARATIVE ANNUAL INDEXES OF WHOLESALE PRICES (OLD BASIS), FARM PRICES, AND COST OF LIVING



indexes for the groups making up the total are shown in Table 14 in the section on Agricultural Products and Foodstuffs, where a more detailed discussion of changes in prices of agricultural products is presented.

The movements of farm prices are usually roughly parallel to those of the wholesale prices of farm products in central markets, which have already been discussed. The level of the farm-price index as compared with its pre-war base, however, is lower than that of the index of wholesale prices of farm products. This is in part a result of differences in methods of weighting and in part a result of the fact that freight charges and marketing costs are important factors in the prices of farm products in central markets and that these did not decline very much at the time of the postwar recession of price levels. The average index of farm prices for 1927 was 131 (base 1910-1914 as 100) as compared with 136 for 1926, 147 in 1925, 116 in 1921, and

209 in 1919. Prices declined during the early part of 1927 and reached a low point of 125 in April. An upward movement started in May, and the index of all farm prices reached 140 in September and closed the year at 137, which was 8 per cent higher than a year earlier.

The general farm price index fails to bring out the marked differences in movement among various classes of farm products and the changes in their levels as compared with pre-war years. Farm prices of fruits and vegetables averaged 55 per cent higher in 1927 than in the years 1910–1914, while prices of grains and cotton and cottonseed were each only 28 per cent higher than in the pre-war period. During the year 1927 prices of cotton and cottonseed, which had reached a low level at the end of 1926, about doubled, while net changes in the prices of other farm products were relatively small.

RETAIL PRICES AND COST OF LIVING

Retail prices fluctuate somewhat less widely than wholesale prices of similar articles. The Bureau of Labor Statistics collects food prices from retail dealers each month and twice a year gathers information in regard to retail prices of other commodities and compiles from them a general cost of living index, which is shown by Chart V and Table 8.

Food Prices.

The movement of retail and wholesale prices of food is usually parallel over any considerable period of time, as is indicated by Table 7. Retail prices, however, did not reach as high a peak in 1920 as wholesale food prices nor have as great a decline in 1921. Furthermore, retail food prices have had a rather different movement than wholesale prices during the past year. Wholesale food prices declined from the spring of 1926 to the summer of 1927, but rallied in the second half of the year. Retail prices, on the other hand, rose to a peak at the end of 1926, declined in the first quarter of 1927, and in December were 4 per cent lower than a year earlier. Both wholesale and retail prices of food averaged lower during the year 1927 than in either of the two preceding years, but were higher than in the period from 1921 to 1924.

Table 7.—Comparative Indexes of Food Prices, Wholesale and Retail

[1913=100]

Year and month	1922		1923		1924		1925		1926		1927	
	Wholesale	Retail	Wholesale	Retail	Wholesale	Retail	Wholesale	Retail	Wholesale	Retail	Wholesale	Retail
Year	138.4	142	143.8	146.2	144.2	145.9	157.5	157.4	152.9	160.6	148.9	155.4
March	136.7	139	143.2	141.9	140.8	143.7	158.9	151.1	151.4	159.9	147.1	153.8
June	140.4	141	142.0	144.3	135.6	142.4	155.3	155.0	156.6	159.7	146.4	158.5
September	137.9	140	147.3	149.3	147.7	146.8	160.3	159.0	152.0	158.5	149.8	154.0
December	144.6	147	146.9	150.3	157.9	151.5	157.1	165.5	151.0	161.8	151.9	155.9

Source: Bureau of Labor Statistics, Department of Labor.

General Cost of Living Index.

The general index of the cost of living is computed from retail prices in 32 large cities; it is possible that the movement in smaller cities and towns is slightly different. Cost of living showed a moderate recession during 1927, and the index number in December was 172, which was lower than at any time since September, 1924, as is indicated by Table 8. The decrease in cost of living during 1927 amounted to 2 per cent and resulted from lower prices for all of the important items entering into the index except the miscellaneous group. Food prices showed the largest decline, which amounted to 4 per cent, while the cost of housing and fuel and light each declined about 3 per cent. As compared with pre-war years, the increases in retail prices of furniture and miscellaneous commodities have been substantially higher than those of food, clothing, and housing.

Table 8.—Index Numbers of Cost of Living in 32 Cities

[1913 = 100]

Period	Total	Food	Clothing	Housing	Fuel and light	Furniture, house furnishings	Miscellaneous
1914, December	103.0	105.0	101.0	100.0	101.0	104.0	103.0
1915, December	105.1	105.0	104.7	101.5	101.0	110.6	107.4
1916, December	118.3	126.0	120.0	102.3	108.4	127.8	113.3
1917, December	142.4	157.0	149.1	100.1	124.1	150.6	140.5
1918, December	174.4	187.0	205.3	109.2	147.9	213.6	165.8
1919, December	199.3	197.0	268.7	125.3	156.8	263.5	190.2
1920, June	216.5	219.0	287.5	134.9	171.9	292.7	201.4
1920, December	200.4	178.0	258.5	151.1	194.9	285.4	208.2
1921, May	180.4	144.7	222.6	159.0	181.6	247.7	208.8
1921, December	174.3	149.9	184.4	161.4	181.1	218.0	206.8
1922, quarterly average	167.3	141.5	172.7	161.2	180.0	205.1	201.6
1923, quarterly average	171.0	146.5	175.5	164.2	183.0	221.2	200.9
1924							
March	170.4	143.7	175.8	167.0	182.2	221.3	201.1
June	169.1	142.4	174.2	168.0	177.3	216.0	201.1
September	170.6	146.8	172.3	168.0	179.1	214.9	201.1
December	172.5	151.5	171.3	168.2	180.5	216.0	201.7
1925							
June	173.5	155.0	170.6	167.4	176.5	214.3	202.7
December	177.9	165.5	169.4	167.1	186.9	214.3	203.5
1926							
June	174.8	159.7	168.2	165.4	180.7	210.4	203.3
December	175.6	161.8	166.7	164.2	188.3	207.7	203.9
1927							
June	173.4	158.5	164.9	162.1	180.8	205.2	204.5
December	172.0	155.9	162.9	160.2	183.2	204.6	205.1

Source: Bureau of Labor Statistics, Department of Labor.

The fact that the general index of the cost of living stands much higher, as compared with the 1913 base, than the general index of wholesale prices is not necessarily due primarily to the increased cost of retail distribution. Many commodities included in the wholesale price index, such as factory machinery, are absent or unimportant

in retail trade, and the wholesale prices of such commodities have, on the whole, risen less than the wholesale prices of articles largely distributed through retail channels. This fact is brought out by comparison of the wholesale and retail prices of the several groups of commodities included in the respective indexes. (Table 9.) Such a comparison can not be close since the items entering into a given retail group are not exactly the same nor given the same relative weight as those entering into the nearest corresponding wholesale group; indeed, there is no comparability between the miscellaneous group shown in the two indexes, as they are very differently constituted.

Retail prices of food products, clothing, and building materials have shown about the same relative increase over pre-war levels as wholesale prices for the corresponding groups, whereas retail prices of fuel and lighting and house furnishings have shown a much greater advance than wholesale prices for the corresponding groups. During 1927 wholesale prices of building materials and fuel and lighting showed a much sharper decline than retail prices for corresponding groups of commodities.

Table 9.—Comparison of Indexes of Wholesale Prices and Cost of Living (Retail Prices), by Nearest Similar Group

[1913=100]

Year	All commodities	Farm products	Food products	Cloths and clothing	Fuel and lighting	Metals and products	Building materials [1]	Chemicals and drugs	House furnishings
1920—Wholesale	226.2	217.9	219.7	295.5	241.4	191.7	264.1	199.7	253.8
Retail	208.5		198.5	273.0	183.4		143.0		289.1
1921—Wholesale	146.9	123.7	144.0	179.5	199.4	129.0	165.4	135.6	195.1
Retail	177.3		149.2	199.7	181.1		160.1		230.1
1922—Wholesale	148.8	133.3	138.4	180.8	217.5	122.0	168.4	124.2	175.8
Retail	167.3		141.5	172.7	180.0		161.2		205.1
1923—Wholesale	153.7	141.2	143.8	200.1	185.1	144.4	189.1	131.0	183.1
Retail	171.0		146.5	175.5	183.0		164.2		221.2
1924—Wholesale	149.7	143.4	144.2	190.9	170.3	134.5	175.1	130.4	172.8
Retail	170.7		146.1	173.4	179.8		167.8		217.1
1925—Wholesale	158.7	158.1	157.5	189.6	174.7	129.9	175.1	134.4	169.2
Retail	175.7		160.3	170.0	181.7		167.3		214.3
1926—Wholesale	151.0	142.2	152.9	175.9	179.9	126.7	173.4	130.6	161.8
Retail	175.2		160.8	167.5	184.4		164.8		209.1
1927—Wholesale	146.8	143.5	148.9	172.2	162.2	120.3	162.6	121.6	157.7
Retail	172.7		157.2	163.9	182.0		161.2		204.9

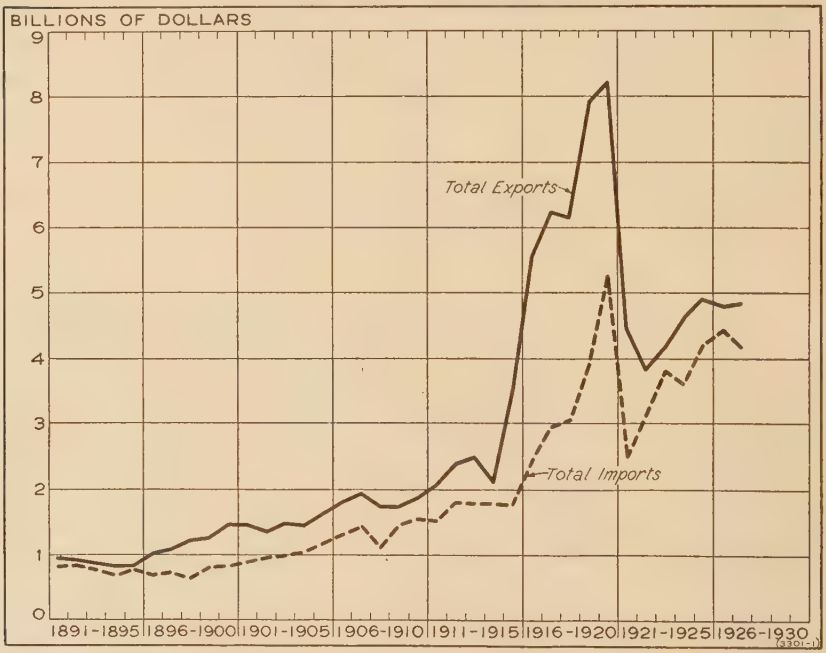
[1] Retail index represents rent of houses and apartments.

Source: Bureau of Labor Statistics, Department of Labor.

FOREIGN TRADE OF THE UNITED STATES

SUMMARY.—The export trade of the United States, although increasing only 1.2 per cent in value, showed a substantial growth in quantitative volume in 1927 and was larger than in any other recent year, while the volume of imports continued at about the same high level as in 1926. The outstanding feature of international trade in 1927 was a sharp decline in the average level of world prices. This caused a decrease of 7 per cent in the average prices received for American commodities shipped abroad, and almost as large a decrease in the average prices paid for imports.

Chart I.—MERCHANDISE EXPORTS AND IMPORTS, 1891–1927



The principal changes in the composition of our export trade were increases over 1926 in shipments of crude foodstuffs and semimanufactured articles, and decreases in exports of crude materials and manufactured foodstuffs. The falling off in our exports of crude materials may be entirely ascribed to the cessation of the abnormal demand for coal which resulted from the British coal stoppage in 1926, while the lower value of our shipments of manufactured foods was primarily a result of decreases in both the quantity and value of exports of meats and animal oils. Exports of finished manufactures continued to expand both in quantity and value, chiefly as a result of a substantially increased foreign demand for American automobiles and machinery.

The most pronounced changes in import trade were substantial decreases in the value of goods imported in a crude state, both materials and foods, and in semimanufactured articles. The decrease in value of imports of crude materials

may be largely ascribed to the lower price of rubber, but there were also decreases in the average import prices of raw silk, wool, and unmanufactured cotton as well as a moderate reduction in the quantity of wool imports. The decline in value of imports of crude foodstuffs resulted chiefly from a reduction in both the quantity and price of our imports of coffee. A pronounced advance in sugar prices, on the other hand, resulted in a considerable increase in the total value of imports of manufactured food.

The expansion in our exports combined with the decline in value of our imports during 1927 resulted in doubling the "favorable" balance of trade, which reached almost $700,000,000. There were heavy increases during the year of many invisible items, such as foreign loans and tourists' expenditures. Foreign loans during the year reached the record volume of $1,593,000,000 and doubtless had a considerable effect in increasing the volume of the export trade.

The only important changes in the geographical distribution of our export trade were increases in shipments to Canada and Africa and decreases in exports to Oceania and Latin America. The increase of $97,000,000 in the trade with Canada was mainly in grains (largely reexported to Europe), motor vehicles, and machinery. Exports of automobiles to Australia and New Zealand, on the other hand, were somewhat curtailed and were the chief cause of the decline in our exports to Oceania. Decreases ranging from 13 to 16 per cent in exports to the United Kingdom, France, and Italy were about offset by an increase of one-third in shipments to Germany and smaller gains in exports to most of the other European countries. Shipments of cotton, meats, and coal to Europe were smaller than in 1926, while exports to that continent of grain, copper, and automotive products were larger.

Imports from each of the continents declined in value in 1927. About three-fifths of the total decline occurred in our imports from Asia, and was primarily the result of lower prices of rubber and silk. The total value of our imports from South America was also considerably reduced as a result of smaller purchases of copper, nitrate, and wool, and a decline in the price of coffee. Trade with Europe was only slightly smaller than in 1926 and that continent replaced Asia as chief supplier of imports to the United States.

GENERAL MOVEMENT OF TRADE

Exports in 1927 reached a total value of $4,865,000,000, which was 1.2 per cent greater than in 1926. If allowance be made for the pronounced decline in the average level of export prices it appears that the total quantity of merchandise shipped abroad increased about 8 per cent, a very substantial growth. Imports amounted to $4,185,000,000 in 1927, 5.6 per cent less in value than in 1926. Adjustment for price changes, however, indicates that there was actually a small increase in quantity of our import trade and that it was probably larger in physical volume than in any previous year on record. Chart I shows the growth in value of both the exports and imports of the United States since 1891. It should be borne in mind, however, that this chart makes no allowance for price changes, and that consequently it does not represent at all closely the quantitative changes in the trade.

Table 1.—Exports, Imports, and Balance of Trade of the United States

(Data cover period beginning July 1, 1876, and ending Dec. 31, 1927)

[Values in millions of dollars]

Yearly average or year	Merchandise					Excess of exports (+) or imports (−)			
	Exports			Total imports	Per cent imports were of exports	Merchandise	Gold	Silver	Merchandise, gold, and silver
	Total	Domestic	Foreign						
1876–1880	677	664	13	493	72.8	+184	−12	+9	+182
1881–1885	792	775	17	667	84.2	+125	−21	+11	+114
1886–1890	738	726	13	717	97.1	+21	+3	+13	+38
1891–1895	892	876	16	785	88.0	+107	+38	+20	+165
1896–1900	1,157	1,136	21	742	64.1	+416	−24	+27	+419
1901–1905	1,454	1,427	27	972	66.9	+482	+1	+23	+506
1906–1910	1,779	1,751	28	1,345	75.6	+434	−15	+14	+433
1911–1915	2,371	2,332	39	1,712	72.2	+658	−3	+23	+678
1915–1920 [1]	6,521	6,417	105	3,358	51.5	+3,163	−149	+79	+3,093
1921–1925	4,397	4,310	87	3,450	78.5	+947	−265	+10	+692
1910–1914 (fiscal)	2,166	2,130	35	1,689	78.0	+477	+17	+20	+515
1913 (calendar)	2,484	2,448	36	1,793	72.2	+691	+28	+27	+746
1919	7,920	7,750	171	3,904	49.3	+4,016	+292	+150	+4,457
1920	8,228	8,080	148	5,278	64.2	+2,950	−95	+26	+2,880
1921	4,485	4,379	106	2,509	55.9	+1,976	−667	−12	+1,297
1922	3,832	3,765	67	3,113	81.2	+719	−238	−8	+473
1923	4,167	4,091	77	3,792	91.0	+375	−294	−2	+79
1924	4,591	4,498	93	3,610	78.6	+981	−258	+36	+759
1925	4,910	4,819	91	4,227	86.1	+683	+134	+35	+852
1926	4,809	4,712	97	4,431	92.1	+378	−98	+23	+303
1927	4,865	4,759	107	4,185	86.0	+681	−6	+21	+695

[1] Period July 1, 1915, to Dec. 31, 1920.

Balance of Trade.

The combined effect of the increase in the value of exports and the decrease in the value of imports was an increase in the excess of merchandise exports over imports from $378,000,000 in 1926 to $681,000,000 in 1927. Gold imports were slightly smaller than in 1926 and there was a substantial increase in the exports so that the net import of gold was only $6,000,000 as compared with $98,000,000 in 1926. Both exports and imports of silver decreased during the past year but there was relatively little change in the net excess of exports which amounted to more than $20,000,000. The combined balance of trade was $695,000,000, which was considerably more than twice as large as in the preceding year.

There was also apparently a considerable increase during 1927 in various invisible items which enter the balance of payments of the United States. The par value of foreign loans floated in this country aggregated $1,593,000,000, which was $275,000,000 greater than in 1926, and there were also increases in the total expenditures of American tourists abroad and in the interest payments received on our foreign investments. Immigrant remittances, on the other hand, were somewhat smaller than in the preceding year. A more detailed

discussion of the balance of payments of the United States will be found in the section on Banking and Finance.

Trend of Trade.

The longer trend of our merchandise trade is shown by Chart I and also in Table 1, while the amount and percentage by which the trade of 1927 increased or decreased from various other years is given in Table 2.

Table 2.—Increase or Decrease of Foreign Merchandise Trade

[Amounts in millions of dollars]

Yearly average or year	Exports		Imports	
	Amount	Per cent	Amount	Per cent
1927 as compared with—				
1910–1914 (fiscal)	+2,700	+124.6	+2,496	+147.8
1921–1925 (calendar)	+468	+10.7	+735	+21.3
1922	+1,034	+27.0	+1,072	+34.4
1923	+698	+16.7	+392	+10.4
1924	+274	+6.0	+575	+15.9
1925	−44	−.9	−42	−1.0
1926	+57	+1.2	−246	−5.6

Foreign trade has shown a rather steady growth throughout the history of the United States, except for brief periods of time when conditions were disturbed by domestic and foreign wars. Exports increased steadily from the beginning of the present century to 1914 and were enormously expanded during the war and postwar boom, partly by increases in quantities and partly by great price advances. After a sharp decline in values during the years 1921 and 1922, which resulted largely from lower prices, there has been another period of expansion which has now lasted for over five years. The trend of imports has been similar to that of exports, except that the expansion during the war years was not so great, whereas the increase in recent years has been relatively greater.

The ratio of imports to exports practically always increases at a time of domestic business expansion and declines as business becomes less active. This ratio, which was only 56 per cent in 1921, advanced to 92 per cent in 1926, the highest point in over 30 years. It declined to 86 per cent in 1927, which was almost exactly the same ratio as in 1925.

The increase in the export trade of the United States as compared with pre-war years is particularly noteworthy in view of the fact that the trade of many other countries, after allowing for price changes, is considerably smaller than at that period. British exports at present are smaller than before the war, and those of Germany show an even more pronounced decline. Of the total exports of all important commercial countries of the world the exports of the United States constituted 12.8 per cent in 1913, 16.3 per cent in 1925, and nearly 17 per cent in 1926.

The proportion of the United States in the export trade of the world showed a tremendous increase during the war. This ratio was reduced in the years which followed the conclusion of peace, but has since been maintained at a level substantially higher than in the pre-war period.

The relative gain of the United States in the world's export trade as compared with the years before the war is indicated by the import statistics of other countries. Comparisons showing the proportion of the United States in the imports of a number of leading countries in different parts of the world are shown in Table 3. The table indicates that the United States furnished a larger proportion of the imports of each reporting foreign country in recent years than in the year 1913. Our share in the imports of Canada, the South American countries, and the countries of the Far East was larger in 1926 than in 1925, but each of the principal European countries purchased a smaller part of their total imports from the United States.

Table 3.—Share of the United States in Imports of Leading Countries

[Values in millions and tenths of millions of dollars]

Country	Total imports				Imports from the United States				United States share of imports			
	1913	1924	1925	1926	1913	1924	1925	1926	1913	1924	1925	1926
									P. ct.	*P. ct.*	*P. ct.*	*P. ct.*
Canada	659.9	797.9	890.2	1,008.3	410.9	518.0	580.1	669.9	64.8	64.9	65.2	66.4
Cuba	140.1	289.8	297.3	260.8	75.3	194.2	189.4	162.5	53.7	67.0	63.7	62.3
Mexico	95.9	155.9	193.1	184.2	48.5	113.1	135.6	129.8	50.6	72.6	70.2	70.5
Argentina	478.9	647.5	801.3	757.9	70.5	142.7	188.5	192.9	14.7	22.0	23.5	25.5
Brazil	326.9	305.2	411.8	390.6	51.4	73.8	102.2	114.6	15.7	24.2	24.8	29.3
Chile	120.3	120.3	147.7	157.0	20.1	28.3	41.0	51.3	16.7	23.5	27.8	32.7
Peru	29.6	73.8	74.2	73.3	8.5	28.9	28.7	33.9	28.8	39.1	38.6	46.2
France	1,625.3	2,103.2	2,123.9	1,929.9	172.7	292.5	304.0	256.6	10.6	13.9	14.3	13.3
Germany	2,565.3	2,163.5	2,942.3	2,368.3	407.6	406.5	522.7	381.3	15.9	18.8	17.8	16.1
Italy	703.6	844.6	1,042.2	1,006.2	101.1	202.6	245.6	218.4	14.4	24.0	23.6	21.7
United Kingdom	3,741.0	5,642.5	6,377.7	6,038.1	689.4	1,065.5	1,184.8	1,115.8	18.4	18.9	18.6	18.5
British India	620.7	774.8	820.4	848.8	15.5	45.0	50.3	62.4	2.5	5.8	6.1	7.4
China	427.7	925.7	816.4	868.8	25.8	170.1	120.6	142.4	6.0	18.4	14.8	16.4
Japan	363.6	1,010.5	1,055.7	1,120.2	61.1	276.4	272.9	320.5	16.8	27.4	25.8	28.6
Australia	380.5	618.8	683.5	734.3	53.1	152.9	155.0	180.8	14.0	24.7	22.7	24.6

Changes in Foreign Trade During 1927.

The seasonal movement of our foreign trade was less marked than usual in 1927. Table 4 shows the total value of exports and imports in each month of the last six years, while Chart II shows the same figures reduced to a daily average basis in order to eliminate fluctuations caused by the varying number of days in different months. Exports as a result of the influence of agricultural products, reach a low point in the early summer, rise to a peak in the fall, and gradually decline throughout the winter and spring.

Table 4.—Monthly Merchandise Exports and Imports

[Values in millions of dollars]

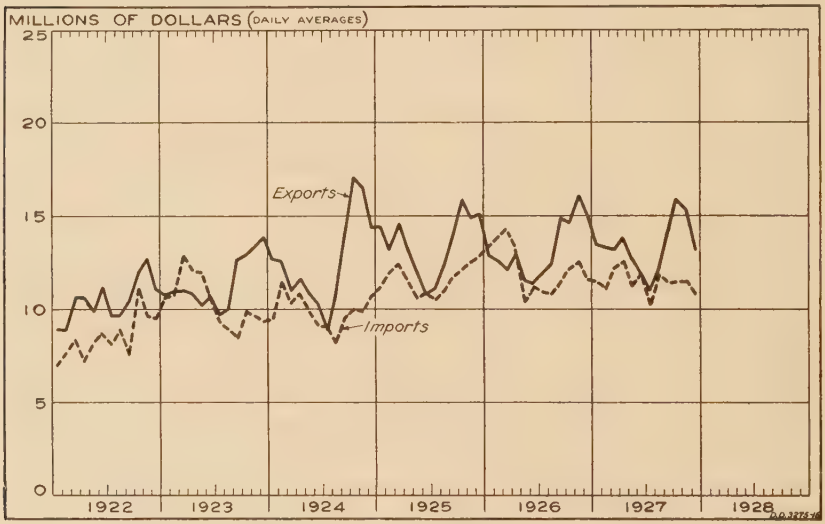
Month	Exports						Imports					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
January	279	335	395	446	397	419	217	329	296	346	417	357
February	251	307	366	371	353	373	216	303	332	333	387	311
March	330	341	340	454	374	409	256	398	320	385	443	378
April	318	325	347	398	388	415	217	364	324	346	398	376
May	308	316	335	371	357	393	253	373	303	328	321	347
June	335	320	307	323	338	357	260	320	274	325	336	355
July	301	302	277	340	368	342	252	287	279	326	339	319
August	302	311	331	380	384	375	281	275	255	340	336	369
September	313	381	427	420	448	425	298	254	287	350	343	342
October	371	399	527	491	455	489	276	308	311	374	377	356
November	380	401	494	448	480	460	292	291	296	376	374	344
December	344	427	446	468	465	408	294	288	333	397	359	331

The export trade of the United States during the first half of 1927 was in record volume for that season of the year as a result of the exceptionally large shipments of raw cotton. Exports of wheat, rye, and barley were also very large, but both the quantity and value of meat and lard exports declined and there was a cessation of the abnormal shipments of coal which resulted from the British strike. Prices were substantially lower. Exports in the third quarter of the year declined instead of showing the usual seasonal expansion. Shipments of barley and rye continued to be exceptionally heavy, but cotton exports were considerably curtailed. Exports of all commodities reached a peak in October which was higher than in 1926, but lower than in either of the two preceding years. This was followed by a decline during the two succeeding months and in December exports were smaller than in the corresponding month of any year since 1922. For the fourth quarter, as a whole, exports were smaller than in any year since 1923 as a result of unusually small shipments of cotton and of packing-house products. Shipments of grains, on the other hand, were much larger than in the fourth quarter of several recent years.

Imports into the United States usually reach a peak in the early part of each year, decline during the spring and summer, and show a moderate expansion in the autumn. This month-to-month trend was considerably affected during 1927 by a decline in prices of commodities imported which was particularly pronounced in the early part of the year. In consequence of the declining prices and some curtailment in volume of imports of coffee, sugar, and petroleum, the trade declined in aggregate value during the first quarter of the year. Prices stiffened somewhat in the spring and the quantity of imports

of rubber, silk, and burlaps increased, resulting in a larger value of imports for the second quarter than in the corresponding period of any previous year except 1920. The customary seasonal decline in imports of sugar, rubber, and wool took place in the third quarter of the year and imports of all commodities reached a low level in July. There were some further price reductions in the latter part of the year and consequently the value of the import trade failed to show its usual expansion. Imports for the fourth quarter were 7 per cent smaller than in the last quarter of 1926, most of the decrease resulting from lower prices of rubber, silk, and coffee.

Chart II.—DAILY AVERAGES OF TOTAL MERCHANDISE EXPORTS AND IMPORTS



QUANTITY AND PRICE CHANGES

Changes in value of trade may be either the result of changes in its physical volume or of price fluctuations. Consequently, in order to understand the true significance of trade developments at any time it is necessary to segregate these two factors. The most satisfactory method of estimating quantitative changes in total exports or imports is the calculation of percentages of change in quantity for each important commodity and the combination of these changes into a general average by the use of price weights which measure their relative importance. Changes in prices are calculated in a similar way by the use of quantities as weights. Indexes calculated by this method are shown in the accompanying table and chart.

The quantitative volume of our export trade has increased by 41 per cent since 1922. During this period there was a remarkable expansion of our trade in finished manufactures—particularly auto-

motive products, machinery, and chemicals. Exports of passenger automobiles were four times as large in 1927 as in 1922; exports of rubber tires doubled; and gasoline exports tripled in quantity. Cotton exports were much curtailed in some recent years because of the diminished purchasing power of Europe and the unusually small American crops from 1921 to 1923, but have now recovered to about their pre-war volume.

Table 5.—Exports, Imports, Per Cent Change, and Balance of Trade, by Quarters

[Values in millions of dollars]

Period	Merchandise		Per cent change in merchandise trade as compared with corresponding quarter 1 year before		Excess of exports (+) or imports (−)		
	Exports	Imports	Exports	Imports	Merchandise	Gold	Silver
1925							
January–March	1,271	1,065	+15.4	+12.3	+206	+133	+7
April–June	1,093	999	+10.5	+10.8	+94	+17	+11
July–September	1,140	1,016	+10.2	+23.8	+124	−6	+7
October–December	1,407	1,147	−4.1	+22.0	+260	−10	+9
1926							
January–March	1,124	1,247	−11.6	+17.1	−123	−77	+6
April–June	1,083	1,055	−.9	+5.6	+28	−4	+7
July–September	1,201	1,019	+5.3	+.3	+182	+10	+4
October–December	1,401	1,110	−.4	−3.2	+291	−26	+6
1927							
January–March	1,201	1,046	+6.8	−16.1	+155	−75	+6
April–June	1,165	1,077	+7.6	+2.1	+88	−56	+5
July–September	1,142	1,030	−4.9	+1.1	+112	−4	+5
October–December	1,356	1,031	−3.2	−7.2	+326	+129	+5

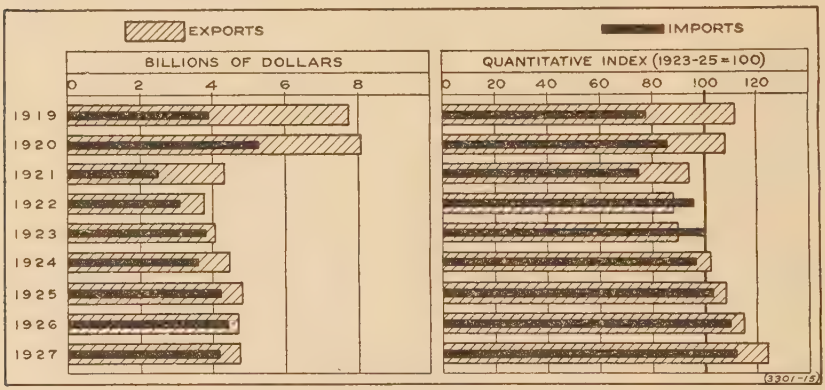
Table 6.—Indexes of Changes in Quantity, Price, and Value of Imports and Domestic Exports

Year	Domestic exports			Imports			Domestic wholesale price index
	Quantity	Price	Value	Quantity	Price	Value	
1913 taken as 100:							
1913	100	100	100	100	100	100	100
1921–1925	123	144	176	151	126	192	151
1919	142	223	317	125	174	218	206
1920	137	241	330	139	213	294	226
1921	120	150	179	120	117	140	146
1922	112	138	154	154	113	174	149
1923	115	146	167	161	132	212	154
1924	130	143	184	156	129	201	150
1925	137	144	197	166	142	236	159
1926	146	133	192	178	139	247	151
1927	158	124	194	180	130	233	147
1923–1925 taken as 100:							
1913	79	69	55	62	75	46	65
1921–1925	96	100	96	94	94	89	98
1919	112	155	173	78	130	101	134
1920	108	167	181	86	158	136	147
1921	94	104	98	75	87	65	95
1922	88	95	84	96	84	80	97
1923	90	101	92	100	98	98	100
1924	102	99	101	97	96	93	97
1925	108	100	108	103	106	109	103
1926	115	92	105	110	104	114	98
1927	124	86	107	112	96	108	95

The average level of export prices increased substantially in 1923, but showed comparatively little change in 1924 and 1925. Prices declined sharply during the past two years, and the average in 1927 was 15 per cent lower than in 1923. Decreases occurred in prices of practically all important commodities during this period and were very marked in the case of meats, lard, cotton, refined petroleum products, rubber tires, and coal. Prices of cotton, tobacco, and certain other agricultural products, however, advanced considerably in the latter part of 1927.

Our imports have increased 50 per cent in volume since 1921 and the trade in 1927 was larger than in any previous year on record. Imports of newsprint have increased two and one-half times during this period and there have also been large gains in the quantity of silk, rubber, and copper imported. The expansion of the import trade

Chart III.—CHANGES IN VALUE AND QUANTITY OF FOREIGN TRADE



in 1927 was less marked than in the immediately preceding years owing to conflicting trends among the commodities. Imports of rubber, cattle hides, silk, and newsprint were larger than in 1926, while imports of coffee, wool, diamonds, sodium nitrate, and a number of other important commodities declined. Import prices showed an average decline of 6.5 per cent in 1927 as compared to 1926, but were 15 per cent higher than in 1922. The gain as compared with 1922 was a result of much higher prices of rubber, tin, coffee, cocoa, sugar, and wool. The decline in average prices during the year 1927 was largely caused by lower quotations for rubber, coffee, burlaps, silk, copper, and sodium nitrate. Prices of sugar, cocoa, and tin, on the other hand, were higher in 1927 than in 1926.

RELATIONSHIP OF EXPORTS TO PRODUCTION

The United States is self-contained to an extraordinary degree and meets a smaller proportion of its consumption requirements than most countries by means of imports. Consequently, it needs to export only relatively moderate quantities of merchandise to pay for

its imports. Such countries as the United Kingdom, Belgium, Netherlands, and Germany are much less able to supply their requirements directly from domestic production, and consequently are obliged to export a much larger proportion of their domestic production in order to pay for imports, especially raw materials and foodstuffs. Similarly, countries such as Canada, Australia, and Argentina, which are primarily agricultural, export a large proportion of their products to pay for manufactured articles imported.

Table 7.—Production of Exportable Goods and Proportion Exported

NOTE.—Agricultural production excludes duplications and seeds. Value added to materials by manufacture is used to represent manufacturing. Value of mine products in 1909 and 1919 are census figures, while estimates for other years are based on data of the Bureau of Mines.

[Millions of dollars]

Year	Agricultural products	Manufactures	Mining	Freight receipts (railroad)	Total	Exports (domestic)	Per cent of total
1899	3,450	4,831	600	[1] 981	9,862	1,253	12.7
1904	4,600	6,294	850	[1] 1,415	13,159	1,426	10.8
1909	6,100	8,529	1,238	[1] 1,801	17,668	1,701	9.6
1914	7,500	9,709	1,450	[1] 2,082	20,741	2,071	10.0
1919	15,700	24,809	3,158	3,625	47,292	7,750	16.4
1921	9,200	18,332	2,900	4,004	34,436	4,379	12.7
1923	11,300	25,850	4,300	4,713	46,163	4,091	8.9
1925	12,400	26,280	4,100	4,650	47,930	4,819	10.1

[1] Mean of preceding and following fiscal year.

Table 8.—Export of Manufactured Goods in Relation to Domestic Production

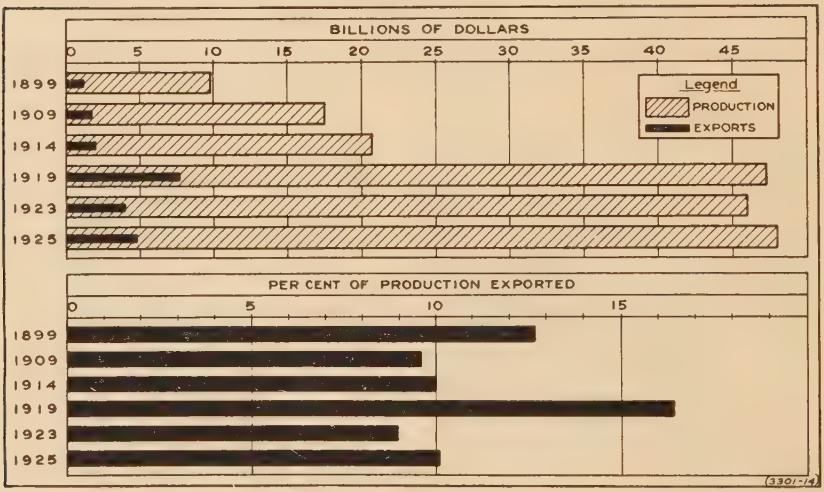
NOTE.—The value of materials entering factories is necessarily approximate, and hence is expressed as a maximum or minimum.

[In millions of dollars]

Year	Value of domestic product			Exports	
	Materials, excluding duplication	Value added by manufacture	Total	Amount	Per cent
Total:					
1899	2,300–2,800	4,830	7,100–7,600	745	9.8–10.5
1904	3,100–3,700	6,300	9,400–10,000	863	8.6–9.2
1909	4,300–5,200	8,530	12,800–13,700	1,001	7.3–7.8
1914	5,300–6,500	9,700	15,000–16,200	1,505	9.3–10.0
1919	12,500–14,500	24,800	38,300–40,300	5,449	13.5–14.2
1921	8,000–9,400	18,330	26,300–27,700	2,722	9.8–10.3
1923	11,500–13,200	25,850	37,300–39,100	2,625	6.7–7.0
1925	12,000–13,500	26,800	38,500–40,000	3,079	7.6–8.0
Foodstuffs manufactures:					
1899	1,300–1,500	415	1,700–1,900	312	16.4–18.4
1904	1,700–2,000	540	2,250–2,550	296	11.6–13.2
1909	2,200–2,700	750	2,950–3,450	281	8.2–9.5
1914	2,700–3,300	1,070	3,750–4,350	374	8.6–10.0
1919	7,000–8,400	2,500	9,500–10,900	1,963	18.0–20.7
1921	4,100–4,800	2,140	6,250–6,950	685	9.9–11.0
1923	4,700–5,500	2,520	7,200–8,000	583	7.3–8.1
1925	5,400–6,200	2,670	8,000–9,000	574	6.4–7.2
Other manufactures:					
1899	1,000–1,300	4,415	5,400–5,700	433	7.6–8.0
1904	1,400–1,700	5,760	7,150–7,450	567	7.6–7.9
1909	2,100–2,500	7,780	9,900–10,300	720	7.0–7.3
1914	2,600–3,200	8,630	11,250–11,850	1,131	9.5–10.1
1919	5,200–6,400	22,300	27,500–28,700	3,486	12.1–12.7
1921	3,800–4,700	16,190	20,000–20,900	2,037	9.7–10.2
1923	6,600–7,900	23,330	29,900–31,200	2,042	6.5–6.8
1925	6,500–7,800	24,130	30,000–32,000	2,505	7.8–8.3

The fact that the export trade of the United States, notwithstanding its marked increase in absolute amount, is not a larger proportion of the total domestic production than a quarter of a century ago (see Table 7), is readily explainable. With its abundant resources it has been able to keep pace with its increasing requirements. In contrast with actual declines in production in many countries resulting from the war and with slow increases in most of the others, the United States has been fortunate in rapidly increasing the volume of its output during the past decade and raising the standard of living of its people. The rest of the world has lacked growth in buying power to keep pace with the growth in producing power in this country.

Chart IV.—DOMESTIC PRODUCTION AND EXPORTS



The significant fact is not that the exports of the United States have increased slowly but that its production has increased greatly.

The ratio of exports to domestic production has varied considerably in the case of agricultural products. It declined for about 15 years preceding the war, but by reason of the stimulus given to food exports during the war the ratio for the five-year period, 1921–1925, was somewhat higher than for 1910–1914. Approximately one-sixth of the total value of our agricultural products has on the average for recent years been shipped overseas.

Leaving out of account manufactured foodstuffs, the value of exports of products of American factories at the present time is six times as great as at the beginning of the century. Even after eliminating the effect of higher price levels, the quantitative volume has trebled. Nevertheless the proportion which exports of nonfood manufactures form of the total output was practically no greater in 1925 than 25 years before, as there has been an equally marked expansion in the domestic market.

The proportion exported has increased somewhat since 1925 (full data are not available).

The tendency with respect both to domestic production and exports is different for foodstuffs manufactures than for other classes of goods. The figures in Table 8 somewhat exaggerate the decline in the proportion of manufactured foods exported during recent years as compared with the beginning of the century. The manufacture of certain classes of food products has been increasingly transferred from the farm and the home to the factory.

In 1899 more than one-sixth (somewhere between 16.4 and 18.4 per cent) of the reported production of manufactured foodstuffs was exported, in addition to much exportation of unmilled grain. While the exports of flour continued fairly steady, a marked decline occurred in the exports of meats, with the consequence that in 1909 and again in 1914 the exports of manufactured foodstuffs were less than one-tenth of the reported domestic output. With the extraordinary war demand of the allied powers for foods, exports of manufactured foodstuffs during 1918 and 1919 reached very large proportions, not far from one-fifth of the total output. The deliberate efforts of the American people to economize food at that time also served to increase the proportion sent overseas. After the war the gradual recovery of agriculture in Europe, the increasing competition of other food-producing countries, and the growth of population in the United States caused a decided decrease in exports of manufactured foodstuffs so that the proportion of domestic production fell in 1925, the latest census year, to below 7 per cent. The exports of manufactured foodstuffs in 1926 and 1927 declined still further.

It is natural that with the steady growth of population in the United States, much exceeding the rate of growth in European countries, and with the rising importance of Canada, Australia, and Argentina as sources of food supply, there should be some decrease in the relative importance of exports of crude and manufactured foods.

Quite different has been the history of the export of manufactured commodities other than foodstuffs. In 1899 the value of the domestic output of such manufactures was in the neighborhood of $5,500,000,000, and the value of the exports $433,000,000—exports thus representing between 7½ and 8 per cent of the total. In 1925 the value of the output was more than $30,000,000,000, and that of the exports a little over $2,500,000,000; the proportion was practically the same as in 1899—around 8 per cent. It is probably now about 9 per cent.

These percentages show remarkably little change despite the immense increase in the absolute figures both of domestic production and of exports, reflecting the great progress of the country in efficiency of production. The ability to produce more and more goods in this country has carried with it the ability to consume more and more.

Table 9.—Ratio of Exports to Production of Important Agricultural and Crude Mineral Products

NOTE.—Production and exports are both for calendar years in the case of meats, milk, lumber, and mineral products, years ended July 31 for cotton; production represents calendar years and exports years ended June 30, for other crops.

Item	Production			Exports			Per cent exported			
	1914	1923	1927	1914	1923	1927	1914	1919	1923	1927
Meat products:[1] million lbs.	14,956	20,695	19,228	956	2,080	1,069	6.4	13.6	10.1	5.6
Beef and veal do.	6,049	7,735	7,693	93	42	34	1.5	3.8	.5	.4
Mutton and lamb do.	712	571	645	5	3	2	.7	.7	.5	.3
Pork do.	6,530	9,595	8,533	393	960	316	6.0	24.0	10.0	3.7
Lard do.	1,657	2,783	2,356	465	1,075	717	28.1	38.7	38.6	30.4
Milk, condensed do.	894	1,914	[2] 1,956	23	197	[2] 117	2.6	38.8	10.3	[2] 6.0
Wheat million bush.	763	868	831	146	222	216	19.1	31.2	25.6	26.0
Oats do.	1,122	1,216	1,247	3	25	15	.2	7.1	2.1	1.2
Rye do.	41	103	41	2	52	22	5.5	40.1	50.0	53.7
Corn do.	2,447	2,906	2,692	11	97	20	.4	.6	3.3	.7
Tobacco, leaf million lbs.	954	1,247	1,298	450	454	517	47.2	43.7	36.4	39.8
Cotton 1,000 bales (500 lbs.)	14,795	10,370	19,135	9,256	5,049	11,587	62.6	45.1	48.7	60.6
Coal, anthracite 1,000 short tons	90,822	93,339	80,652	4,290	5,090	3,323	4.7	5.6	5.5	4.1
Coal, bituminous do.	422,704	564,565	519,804	15,458	21,454	18,012	3.7	4.3	3.8	3.5
Petroleum, crude[3] 1,000 bbls.	265,763	732,407	894,435	2,970	17,061	15,843	1.1	1.6	2.3	1.8

[1] Production includes small quantity of goat meat not given separately.
[2] Data are for 1926.
[3] Barrels of 42 gallons.

Table 9 shows the output of some of the leading agricultural and crude material products of the United States and the proportion which is exported. Large quantities of American cotton have always been sold to foreign countries, but the ratio of production exported was considerably reduced in the war years and immediately thereafter. This was owing in part to the diminished buying power of Europe and in part to the small American crops which reduced the surplus available for export. In the crop year 1926–27, however, our crop was larger than in any other year on record and over three-fifths of the cotton produced was shipped abroad. Over one-third of our tobacco crop is sold regularly on foreign markets and about one-quarter of the wheat crop. Rye exports have enormously increased during the past decade and at present from one-quarter to one-half of the crop is being shipped to foreign countries. Of our packing-house products lard figures most prominently in foreign trade, about one-third being exported. Meat exports were greatly expanded during the war on account of the unusually large purchases of Europe, but the ratio of exports to production has declined in the years since the war and in 1927 was only about one-half as large as in 1914.

Coal exports were exceptionally large in 1926 as a result of the British coal stoppage, but decreased in 1927 to a smaller proportion of the mine output than in 1914. Exports of crude petroleum expanded enormously in the period from 1919 to 1924, but have since shown a moderate decline in their ratio to total production.

The ratio of exports to production of various manufactured and semimanufactured articles is shown in Table 10. Of the leading semimanufactured products, copper and naval stores have an exceptionally large foreign demand. We are now importing large quantities of copper ore and crude copper, but we continue to sell to foreign countries almost one-half of our current output of refined copper. About two-thirds of our production of rosin is exported each year and a somewhat smaller part of our turpentine output.

Table 10.—Ratio of Exports to Production of Important Manufactured Products

NOTE.—All data except as noted are for calendar years. Production figures for 1927 are partly estimated.

Item	Production			Exports			Per cent exported			
	1914	1923	1927	1914	1923	1927	1914	1919	1923	1927
Leather boots and shoes, 1,000 prs.	292,666	351,114	343,608	10,180	7,697	5,870	3.5	6.5	2.2	1.7
Rubber boots and shoes, do	61,236	95,315	[1] 82,078	1,939	5,270	[1] 6,655	3.2	6.3	5.5	[1] 8.1
Automobile tires (casings), thousands	8,021	45,426	64,715	------	1,363	2,631	-----	-----	3.0	4.1
Cigarettes, millions	16,870	66,734	97,188	2,407	12,253	7,092	14.3	30.5	18.4	7.3
Rosin [2], 1,000 bbls. (500 lbs.)	2,156	1,652	1,700	1,354	1,040	1,229	62.8	39.9	63.0	72.3
Turpentine [2], 1,000 gals.	32,800	24,253	25,500	18,901	9,012	14,470	57.6	43.2	37.2	56.7
Cotton yarn, 1,000 lbs.	515,039	635,632	[1] 636,268	------	12,081	[1] 21,892	-----	3.3	1.9	[1] 3.4
Hosiery, 1,000 doz. prs.	75,164	97,433	102,200	------	6,714	6,288	-----	11.2	6.9	6.2
Lumber, million bd. ft.	40,500	39,000	[3] 37,500	2,103	2,368	[3] 2,695	5.2	4.3	6.1	[3] 7.2
Gasoline and naphtha, 1,000 bbls [4]	34,763	179,903	330,667	4,993	20,136	43,436	17.6	9.4	11.2	13.1
Kerosene, do [4]	46,078	55,927	56,114	24,058	20,189	19,280	52.2	41.8	36.1	34.4
Gas and fuel oil, do [4]	88,907	287,481	392,342	15,102	29,252	43,019	17.0	7.7	10.2	11.0
Lubricating oil, do [4]	12,329	26,128	31,721	4,563	8,296	9,636	37.1	31.3	31.8	30.4
Iron and steel:										
Plates and sheets, 1,000 tons	4,719	9,498	9,628	280	386	469	5.9	14.1	4.1	4.9
Skelp iron or steel, do	1,982	3,734	3,419	------	105	92	-----	-----	2.8	2.7
Tin plate, terneplate, etc., do	931	1,507	1,674	60	124	254	6.4	17.8	8.2	15.2
Structural shapes, do	2,031	3,405	3,742	182	199	215	9.0	13.8	5.8	5.7
Rails, do	1,945	2,905	2,806	175	267	178	9.0	29.6	9.2	6.3
Wrought pipe and boiler tubes, do	1,738	3,351	3,117	------	194	259	-----	9.9	5.8	8.3
Copper, 1,000 short tons	767	990	1,159	420	412	538	54.8	28.6	41.9	46.4
Machinery:										
Locomotives (steam), number	--------	3,598	[1] 1,310	269	266	[1] 363	-----	28.1	7.4	[1] 27.7
Sewing machines, cases, and attachments, 1,000 dolls.	27,238	42,993	[1] 45,131	8,659	10,905	[1] 10,634	31.8	22.0	25.4	[1] 23.6
Cash registers and parts, do	15,935	44,382	[1] 42,326	3,200	3,579	[1] 5,340	20.1	13.9	8.1	[1] 12.6
Typewriters and parts, do	20,517	39,521	[1] 50,190	7,573	14,362	[1] 19,652	36.9	40.2	36.3	[1] 39.2
Agricultural [5], do	--------	364,854	459,574	24,733	50,572	90,098	-----	-----	13.9	19.6
Automobiles (passenger cars and trucks), thousands	573	3,890	3,394	26	152	384	4.5	4.4	3.9	11.3
Motor cycles, do	62	42	[1] 39	7	22	[1] 23	10.5	41.4	52.8	[1] 59.0
Pianos, do	326	348	[1] 307	6	18	[1] 21	1.8	4.9	5.3	[1] 6.8

[1] Data are for 1925.
[2] Production figures are for years ended Mar. 31; exports, for years ended June 30.
[3] Data are for 1926.
[4] Barrels of 42 gallons.
[5] Production figures are "Farm equipment."

Of the finished manufactured articles it is worthy of note that the foreign demand is large for articles which require much fabrication and which the United States produces by mass methods such as various types of machinery and automotive products. For example, we export over one-half of our annual output of motor cycles, over one-third of our typewriters, one-quarter of our sewing machines,

about one-fifth of our agricultural machinery, and about one-eighth of our output of cash registers and automobiles. There is also a large foreign demand for refined mineral oils. Over one-third of our output of kerosene is shipped abroad, but export markets have tended to take a smaller proportion of the total in recent years. Exports of lubricating oil and gasoline, on the other hand, have about kept pace with the rapid expansion of domestic production. The United States also ships abroad about one-twelfth of its production of rubber boots and shoes and about 4 per cent of its huge output of rubber tires. Cigarette exports, which immediately after the war amounted to about one-third of our total production, have been declining in recent years, and in 1927 only about 7 per cent of our output was marketed abroad.

COMMODITY DISTRIBUTION OF TRADE

Distribution by Economic Classes.

Chart V indicates that finished manufactures have become much the most important group of exports in recent years and amounted to 41.6 per cent of the total in 1927 as compared with 30.7 in 1910–1914, 36.3 per cent in 1921–1925, and 38.3 per cent in 1925. This steady growth in the proportion of exports of manufactures is a natural consequence of the increasing importance of manufacturing in our total domestic production. Exports of crude materials and foodstuffs, on the other hand, have declined in relative importance since the beginning of the present century while the proportion of semimanufactures in total exports, which has been remarkably stable in recent years, was larger in 1927. (Table 12.)

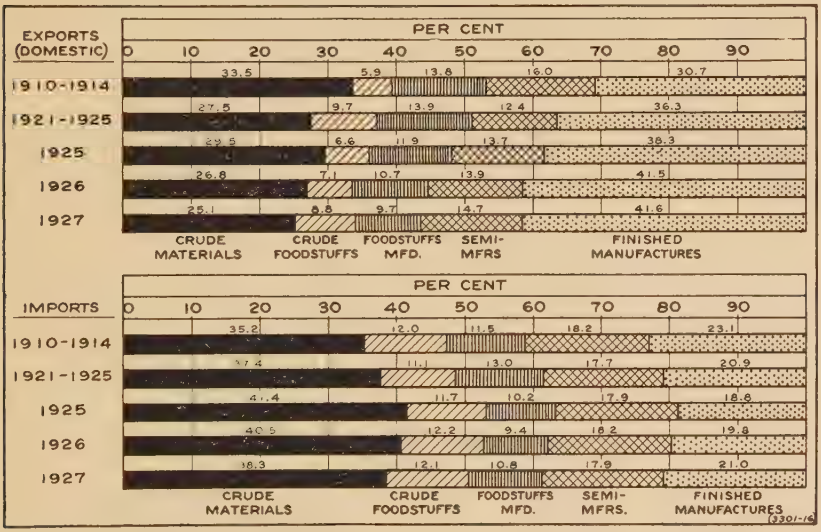
Table 11.—Economic Character of the Foreign Trade, by Quarters

[Values in millions of dollars]

Class	1925				1926				1927			
	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.
Domestic exports	1,251	1,069	1,117	1,382	1,098	1,056	1,179	1,378	1,175	1,136	1,117	1,331
Crude materials	421	202	261	537	286	211	268	496	333	224	212	424
Crude foodstuffs	80	92	86	60	44	61	130	100	63	87	138	132
Manufactured foodstuffs	156	124	143	151	130	106	126	140	117	112	104	130
Semimanufactures	171	174	160	156	153	164	161	177	173	183	174	171
Finished manufactures	422	477	467	477	485	514	493	464	489	530	489	473
Imports	1,065	999	1,018	1,147	1,247	1,055	1,019	1,110	1,046	1,077	1,030	1,031
Crude materials	425	406	416	501	572	416	391	415	419	426	396	360
Crude foodstuffs	125	106	124	139	142	125	123	149	130	120	110	145
Manufactured foodstuffs	119	126	97	91	105	108	92	112	114	128	103	106
Semimanufactures	203	175	182	195	219	197	193	195	183	187	191	187
Finished manufactures	193	186	196	221	209	209	220	239	201	214	229	233

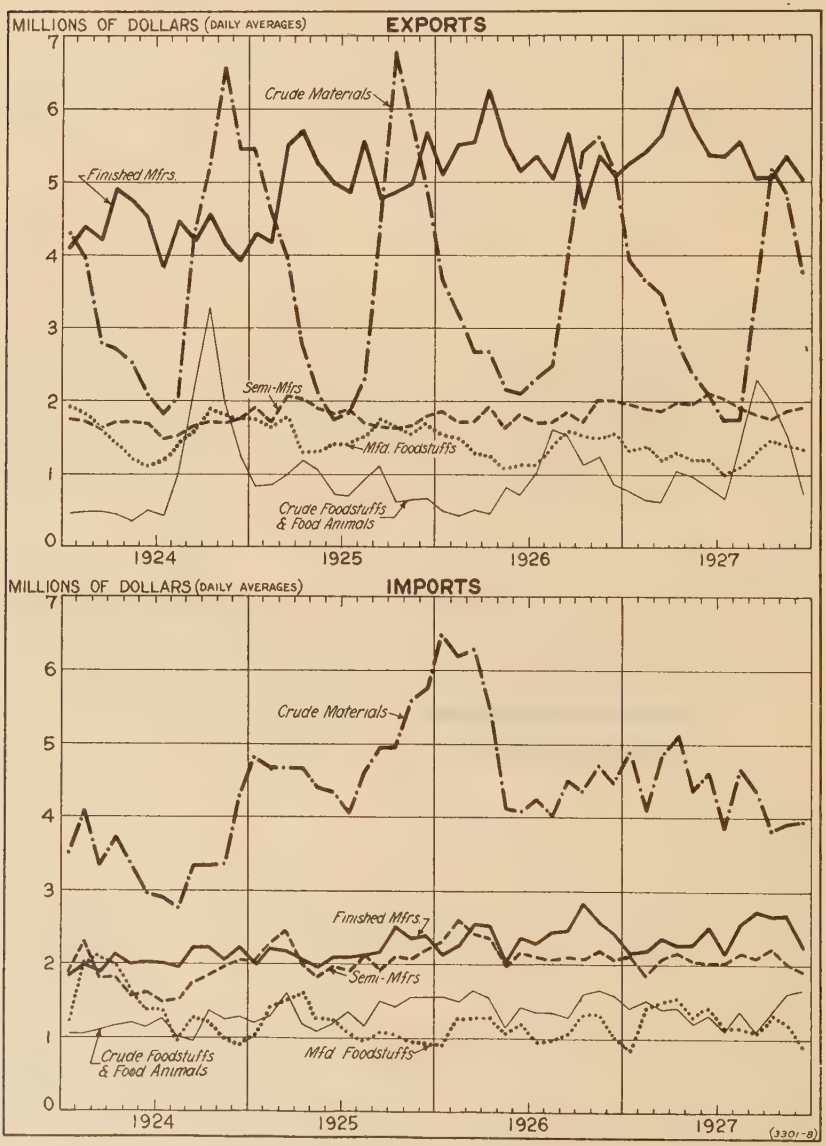
The changes in relative importance of various classes of imports have been less pronounced than in the case of exports. There has been evident a general tendency for crude materials to increase in importance and for finished manufactures to decline, which is the logical result of America's great industrial development; but this change has been rather gradual. During the year 1927, in fact, the ratio of crude materials to the total declined somewhat, largely as a result of lower prices of silk and rubber while a further relative increase appeared in the imports of finished manufactured articles. Our exports of finished manufactured articles are, however, at the present time two and one-quarter times as great as our imports of this class of merchandise.

Chart V.—PERCENTAGE DISTRIBUTION OF TRADE BY ECONOMIC CLASSES



Quarterly changes in the foreign trade by economic classes are presented in Table 11 and monthly figures reduced to a daily average basis in Chart VI. In the third and fourth quarters of 1927 exports of crude materials (dominated by cotton) were exceptionally small, and in the same quarters exports of crude foodstuffs showed a large seasonal expansion on account of heavy shipments of grains after the harvest. Imports of crude materials for the first and fourth quarters of 1927 were much reduced from the corresponding quarters of 1926 as a result of the lower prices of rubber and silk. In the second and third quarters an expansion in imports of hides and skins and silk increased the total value of crude materials, notwithstanding price declines.

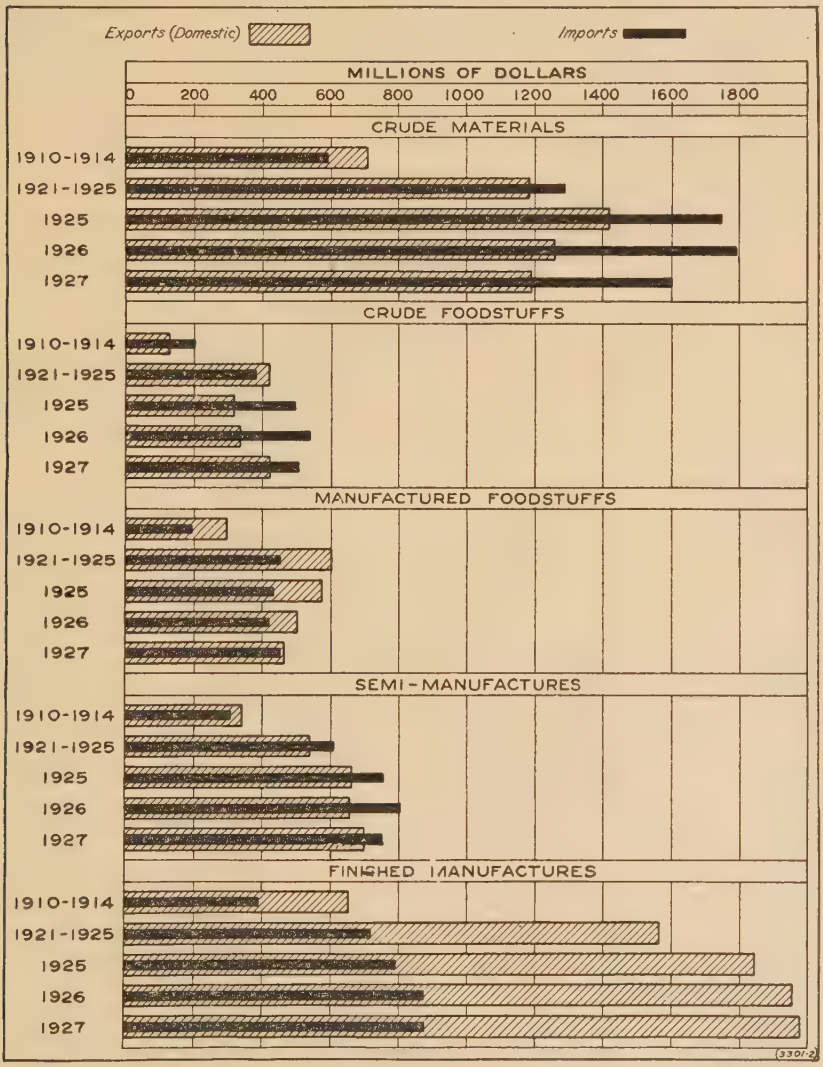
Chart VI.—DAILY AVERAGES OF EXPORTS AND IMPORTS BY ECONOMIC CLASSES



Commodity Character of Export Trade.

Chart VII and Tables 12 and 13 show the changes in the character of our trade by economic classes in recent years, and Chart VIII and Tables 14 and 15 show the value of exports of leading commodities in 1927. The increase in value of total exports during 1927 was

Chart VII.—DISTRIBUTION OF FOREIGN TRADE BY ECONOMIC CLASSES



confined largely to crude foodstuffs and semimanufactured articles, although there was also a moderate expansion in value, and a substantial growth in the quantity of finished manufactures which were exported. Exports of crude foodstuffs were larger than in any other year since 1922, and showed an increase in value of 26 per cent as

compared with 1926. This gain may be ascribed entirely to the large expansion of our foreign shipments of grains—particularly rye, barley, and wheat. Over three times as much American rye was shipped abroad in 1927 as in the preceding year, while exports of barley were two and one-half times as large. Exports of wheat grain increased by 30,000,000 bushels and were over one-fifth larger than in 1926.

Sales of semimanufactured articles to foreign customers were 30 per cent larger in 1927 than the average for the five-year period 1921–1925, and were 6.8 per cent greater than in 1926. The increase in this group resulted from a further growth in the quantity and value of our exports of copper, lumber, coal-tar chemicals, and fuel oil. Exports of iron and steel sheets and plates, on the other hand, declined.

Table 12.—Foreign Trade of the United States by Economic Classes

(Data cover period beginning July 1, 1876, and ending Dec. 31, 1927)

[Values in millions of dollars]

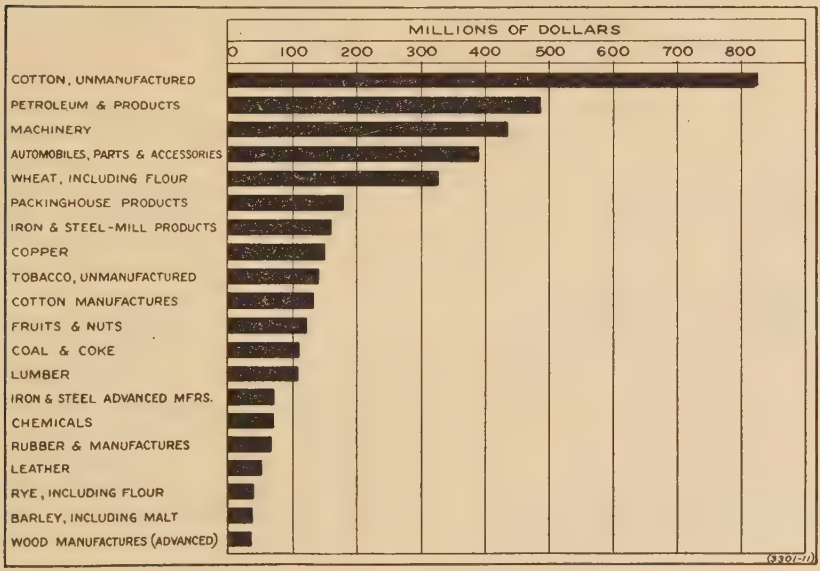
Yearly average or year	Total value	Crude materials		Crude foodstuffs		Manufactured foodstuffs		Semimanufactures		Finished manufactures	
		Value	Per cent	Value	Per cent	Value	Per cent	Value	Per cent	Value	Per cent
DOMESTIC EXPORTS											
1876–1880	664	214	32.2	159	23.9	162	24.4	30	4.5	99	14.9
1881–1885	775	262	33.8	163	21.0	197	25.5	37	4.8	116	14.9
1886–1890	726	277	38.1	109	15.0	182	25.0	40	5.5	119	16.4
1891–1895	876	295	33.7	151	17.2	239	27.2	55	6.3	136	15.6
1896–1900	1,136	297	26.1	215	18.9	273	24.0	110	9.6	242	21.3
1901–1905	1,427	432	30.3	174	12.2	316	22.2	161	11.3	344	24.1
1906–1910	1,751	555	31.7	156	8.9	317	18.1	249	14.2	474	27.1
1911–1915	2,332	717	30.7	206	8.8	334	14.3	359	15.4	716	30.7
1915–1920 [1]	6,417	1,169	18.2	588	9.2	1,133	17.7	987	15.4	2,540	39.6
1921–1925	4,310	1,187	27.5	420	9.7	601	13.9	537	12.5	1,566	36.3
1910–1914 (fiscal)	2,130	713	33.5	127	5.9	295	13.8	342	16.0	654	30.7
1913 (calendar)	2,448	777	31.7	170	6.9	325	13.3	397	16.2	780	31.9
1921	4,379	984	22.5	673	15.4	685	15.7	410	9.4	1,627	37.1
1922	3,765	988	26.3	459	12.2	588	15.6	438	11.6	1,292	34.3
1923	4,091	1,208	29.5	257	6.3	583	14.3	564	13.8	1,478	36.1
1924	4,498	1,333	29.6	393	8.7	573	12.8	611	13.6	1,588	35.3
1925	4,819	1,422	29.5	318	6.6	574	11.9	662	13.7	1,843	38.3
1926	4,712	1,261	26.8	335	7.1	503	10.7	656	13.9	1,957	41.5
1927	4,759	1,193	25.1	421	8.8	463	9.7	700	14.7	1,981	41.6
IMPORTS											
1876–1880	493	91	18.5	89	18.6	106	21.5	61	12.4	145	29.4
1881–1885	667	133	20.0	99	14.9	128	19.1	92	13.7	215	32.2
1886–1890	717	162	22.6	113	15.8	118	16.5	113	15.8	210	29.3
1891–1895	785	185	23.6	147	18.7	141	17.9	113	14.4	200	25.5
1896–1900	742	219	29.5	112	15.1	118	15.9	99	13.4	194	26.2
1901–1905	972	325	33.4	126	12.9	120	12.4	162	16.6	240	24.7
1906–1910	1,345	465	34.6	148	11.0	159	11.8	240	17.8	334	24.8
1911–1915	1,712	598	34.9	219	12.8	215	12.6	297	17.4	383	22.4
1915–1920 [1]	3,358	1,348	40.1	408	12.2	545	16.2	574	17.1	484	14.4
1921–1925	3,450	1,290	37.4	383	11.1	448	13.0	609	17.7	720	20.9
1910–1914 (fiscal)	1,689	595	35.2	203	12.0	194	11.5	307	18.2	389	23.1
1913 (calendar)	1,793	620	34.6	221	12.3	198	11.1	340	19.0	413	23.1
1921	2,509	859	34.2	300	12.0	368	14.7	362	14.4	620	24.7
1922	3,113	1,180	37.9	330	10.6	387	12.4	553	17.8	663	21.3
1923	3,792	1,407	37.1	363	9.6	530	14.0	721	19.0	771	20.3
1924	3,610	1,258	34.9	425	11.8	522	14.4	656	18.2	749	20.8
1925	4,227	1,748	41.4	495	11.7	433	10.2	755	17.9	796	18.8
1926	4,431	1,793	40.5	540	12.2	418	9.4	804	18.1	877	19.8
1927	4,185	1,601	38.3	505	12.1	451	10.8	750	17.9	878	21.0

[1] Period July 1, 1915, to Dec. 31, 1920.

Table 13.—Percentage Increase or Decrease in Foreign Trade by Economic Classes

Class	Per cent change in 1927 exports (domestic) from—			Per cent change in 1927 imports from—		
	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926
Total	**+123.3**	**+10.4**	**+1.0**	**+147.8**	**+21.3**	**−5.8**
Crude materials	+67.2	+.5	−5.4	+169.1	+24.1	−10.6
Crude foodstuffs	+232.9	+.3	+25.7	+148.3	+31.9	−6.5
Manufactured foodstuffs	+57.1	−22.9	−7.9	+131.9	+.6	+7.8
Semimanufactures	+104.9	+30.4	+6.8	+144.1	+23.0	−6.8
Finished manufactures	+202.8	+26.5	+1.2	+125.6	+22.0	+.2

Chart VIII.—EXPORTS OF LEADING COMMODITIES IN 1927



Exports of finished manufactures during the past year were 26½ per cent greater in value than in 1921–1925, and were 1.2 per cent larger than in 1926. The quantitative measurement of this trade would show a much larger growth during the past year than is indicated by the value figures, as the average prices of many of the articles included in the group were substantially lower than a year earlier. For example, the number of rubber tires exported increased 76 per cent in 1927, and there was an increase of 26 per cent in the number of automobiles shipped abroad. There were also substantial increases in our exports of industrial machinery and paints, a continuation of the rapid growth evidenced in other recent years. The expansion of our foreign trade in automobiles and tires was accompanied by a small increase in the quantity of our exports of gasoline, but the value of this trade declined by about one-fifth on account of a sharp decrease in prices.

Crude material exports decreased 5.4 per cent in 1927, and were lower in value than in any year since 1922. The decrease for this group as compared with 1926 was principally the result of a decline of $94,000,000, or about 46 per cent in the value of our coal shipments. This decrease was expected, however, as the 1926 coal exports were exceptionally large on account of the British coal stoppage, and the temporary cessation of coal exports from Great Britain to other countries. Exports of crude petroleum were also considerably smaller in value in 1927, although about 3 per cent larger in quantity than in 1926. Cotton and tobacco exports, on the other hand, increased slightly both in quantity and value.

Table 14.—Exports (Domestic) of Leading Commodities

[Values in millions and tenths of millions of dollars]

Commodity	Quantity				Value			
	[1] 1910–1914	1921–1925	1926	1927	[1] 1910–1914	1921–1925	1926	1927
Cotton, unmanufactured ..... million lbs	4,420	3,420	4,692	4,897	551.9	805.0	814.4	826.3
Petroleum and products					127.7	405.1	554.5	486.1
Refined oils ..... million bbls	37	76	108	116	110.5	363.6	497.2	429.9
Crude oil ..... do	4	13	15	16	6.4	22.5	28.5	25.9
Machinery [2]					158.2	320.8	399.9	435.5
Electrical, and apparatus					20.9	69.1	84.2	84.6
Agricultural, and implements					40.5	51.9	85.5	90.1
Industrial					78.6	166.7	179.6	201.5
Automobiles, parts and accessories [3] thousands	19	150	306	384	24.1	177.2	320.2	388.3
Wheat, including flour ..... million bush	105	227	194	229	106.2	321.9	284.9	324.8
Wheat, grain ..... do	57	159	138	168	55.1	228.3	201.7	239.5
Packing house products ..... million lbs	1,220	1,936	1,416	263	146.5	279.6	234.8	180.9
Meats ..... do	485	809	481	356	62.7	133.2	98.7	64.2
Fats and oils ..... do	735	1,126	935	907	83.8	146.4	136.1	116.8
Lard ..... do	474	861	699	681	52.1	115.6	108.6	92.0
Iron and steel-mill products ..... thousand tons	2,180	1,953	2,166	2,182	91.3	166.8	174.1	160.6
Copper, including manufactures ..... million lbs	828	877	966	1,077	121.2	129.8	141.2	150.2
Tobacco, unmanufactured ..... do	392	503	487	512	44.8	164.6	136.9	139.7
Cotton manufactures, including yarns, etc					45.2	133.1	128.9	133.1
Cloths, duck, tire fabric ..... million sq. yd	399	525	513	562	27.1	79.9	74.6	76.5
Fruits and nuts					28.7	82.9	111.8	121.7
Coal and coke ..... million tons	18	21	36	20	55.7	131.1	203.9	109.7
Sawmill products					66.0	85.1	97.4	107.6
Boards and timber ..... million bd. ft	2,704	2,145	2,694	2,951	61.5	83.9	96.6	106.9
Iron and steel, advanced manufactures					45.0	68.6	75.9	73.3
Chemicals (coal tar, medicinal, industrial)					21.8	56.2	64.9	72.9
Rubber and manufactures					12.4	38.5	59.2	68.7
Automobile casings ..... thousands		[4] 1,392	1,497	2,631		16.3	24.4	33.8
Leather					39.1	44.3	49.8	54.0
Rye, including flour ..... million bush	1	35	12	36	.6	39.5	12.4	39.9
Barley and malt ..... do	8	26	17	41	5.3	24.4	13.8	38.5
Wood manufactures (advanced)					25.7	30.8	37.9	38.1
Naval stores, gums and resins					23.4	22.4	36.9	34.3
Furs and manufactures					14.7	22.5	23.2	30.9
Oilcake and meal ..... million lbs	1,668	1,166	1,450	1,570	23.6	24.7	26.5	30.2
Paper and manufactures					10.7	24.6	26.8	27.0
Books and printed matter					9.2	19.9	21.9	24.2
Pigments, paints and varnishes					6.8	14.6	18.9	20.9
Photographic goods					8.0	17.4	18.6	18.7
Leather manufactures					19.0	21.8	18.5	18.4
Fish					9.7	18.0	19.9	18.3
Dairy products					3.3	30.1	19.0	17.4

[1] Fiscal years ended June 30.
[2] Includes office appliances and printing machinery.
[3] The number is automobiles only; the value includes parts and accessories.
[4] Average for years 1922–1925.

Table 15.—Per Cent Change in the Leading Domestic Exports and Percentage Which Each Forms of the Total Value of Exports

Commodity	Quantity			Value					
	Per cent change in 1927 from—			Per cent change in 1927 from—			Per cent of total exports (domestic)		
	[1] 1910–1914	1921–1925	1926	1910–1914	1921–1925	1926	1910–1914	1921–1925	1927
Cotton, unmanufactured	+10.8	+43.2	+4.4	+49.7	+2.7	+1.5	25.9	18.7	17.4
Petroleum and products				+280.6	+20.0	−12.3	6.0	9.4	10.2
Refined oils	+212.3	+51.1	+6.6	+289.0	+18.2	−13.5	5.2	8.4	9.0
Crude oil	+267.9	+18.9	+2.8	+306.5	+15.4	−9.0	.3	.5	.5
Machinery				+175.2	+35.7	+8.9	7.4	7.4	9.2
Electrical and apparatus				+305.5	+22.3	+.4	1.0	1.6	1.8
Agricultural and implements				+122.7	+73.6	+5.4	1.9	1.2	1.9
Industrial				+156.5	+20.8	+12.2	3.7	3.9	4.2
Automobiles, parts and accessories	+1,925.7	+155.9	+25.8	+1,508.5	+119.2	+21.3	1.1	4.1	8.2
Wheat, including flour	+117.8	+.7	+17.8	+205.9	+.9	+14.0	5.0	7.5	6.8
Wheat, grain	+195.7	+5.7	+21.7	+335.0	+4.9	−18.7	2.6	5.3	5.0
Packing-house products	+3.4	−34.8	−10.9	+30.3	−31.7	−23.0	6.9	6.5	4.0
Meats	−26.7	−56.0	−26.1	+2.4	−51.8	−35.0	2.9	3.1	1.3
Fats and oils	+23.4	−19.5	−3.0	+51.3	−13.4	−14.2	3.9	3.4	2.7
Lard	+43.6	−20.9	−2.5	+76.7	−20.4	−15.3	2.4	2.7	1.9
Iron and steel-mill products	+2.6	+14.5	+.7	+75.9	−3.7	−7.7	4.3	3.9	3.4
Copper, including manufactures	+30.1	+22.8	+11.5	+23.9	+15.7	+6.3	5.7	3.0	3.2
Tobacco, unmanufactured	+30.5	+1.8	+5.1	+211.8	−15.1	+2.0	2.1	3.8	2.9
Cotton manufactures, including yarns, etc.				+194.7	−.1	+3.2	2.1	3.1	2.8
Cloth, duck, tire fabric	+40.9	+7.0	+9.4	+182.8	−4.2	+2.6	1.3	1.9	1.6
Fruits and nuts				+324.7	+46.9	+8.9	1.3	1.9	2.6
Coal and coke	+9.0	−3.6	−45.0	+96.8	−16.3	−46.2	2.6	3.0	2.3
Sawmill products				+63.0	+26.5	+10.5	3.1	2.0	2.3
Boards and timber	+9.1	+37.6	+9.5	+73.8	+27.4	+10.7	2.9	1.9	2.2
Iron and steel advanced manufactures				+62.9	+6.9	−3.3	2.1	1.6	1.5
Chemicals (coal-tar, medicinal, industrial)				+234.6	+29.7	+12.3	1.0	1.3	1.5
Rubber and manufactures				+451.7	+78.1	+16.0	.6	.9	1.4
Automobile casings			+75.8		+107.4	+38.7		.4	.7
Leather				+38.1	+21.9	+8.4	1.8	1.0	1.1
Rye, including flour	+3,973.4	+3.0	+200.6	+6,337.3	+1.1	+222.4	[2]	.9	.8
Barley and malt	+403.8	+55.0	+141.6	+632.8	+57.9	+178.6	.2	.6	.8
Wood manufactures (advanced)				+48.4	+23.5	+.5	1.2	.7	.8
Naval stores, gums, and resins				+46.9	+5.3	−6.9	1.1	.5	.7
Furs and manufactures				+110.7	+37.3	+33.1	.7	.5	.6
Oilcake and meal	−5.9	+34.7	+8.3	+27.7	+22.2	+14.1	1.1	.6	.6
Paper and manufactures				+152.5	+9.6	+.5	.5	.6	.6
Books and printed matter				+162.9	+21.7	+10.2	.4	.5	.5
Pigments, paints, and varnishes				+207.4	+43.2	+10.7	.3	.3	.4
Photographic goods				+134.2	+7.5	+.5	.4	.4	.4
Leather manufactures				−3.2	−15.5	−.8	.9	.5	.4
Fish				+88.9	+2.1	−7.9	.5	.4	.4
Dairy products				+421.9	−42.1	−8.4	.2	.7	.4

[1] Fiscal years ended June 30.

[2] Less than one-tenth of 1 per cent.

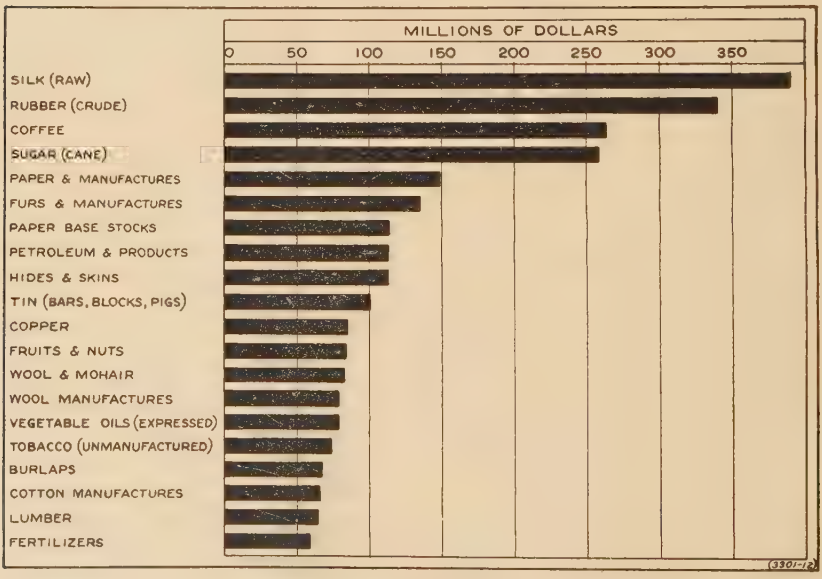
Exports of manufactured foods were about 8 per cent smaller in value than in 1926, and were 23 per cent less than in the average of the five preceding years. Most of the decline during the past year was accounted for by reduced sales of our packing-house products. Meat exports amounted to only $64,000,000, which was one-third smaller than in 1926 and less than one-half the average value for 1921–1925. Exports of animal oils and fats also decreased both in

quantity and value, while the export trade in flour and fruit showed a moderate expansion. Exports of refined sugar and dairy products have both shown marked declines as compared with the years 1921–1925. The general nature of the growth in the export trade of the United States is indicated by the fact that over two-thirds of the commodities included in Tables 14 and 15 increased in value during the past year, and 14 of the commodities for which quantity data are available show increases as compared to only 3 decreases. The values of shipments to principal countries of destination for certain of our leading exports are shown in Table 18.

Changes in Composition of Import Trade.

In 1927 there was a reversal of the trends of recent years in regard to the composition of the United States import trade. Crude materials, crude foodstuffs, and semimanufactured articles, the economic classes of merchandise which have shown the most pronounced gains in recent years, all declined in value during 1927 (see Tables 12 and 13), while manufactured foodstuffs, which decreased continuously from 1923 to 1926, was the only class of imports which showed a substantial gain.

Chart IX.—IMPORTS OF LEADING COMMODITIES IN 1927



The class of imports which showed the most pronounced decrease in value was crude materials. Imports of this group were 11 per cent smaller than in 1926, though they continued to be 24 per cent greater than the average for the years 1921–1925. The decrease from 1926 was due principally to a reduction of $166,000,000 in the value

of rubber imports. This was entirely a result of the lower average price paid for crude rubber, as the quantity of rubber imported was 3 per cent larger than in 1926. The average price of imported crude rubber declined from 55 cents in 1926 to 36 cents in 1927. There were also substantial decreases in the quantity and value of our imports of wool and crude petroleum and a small decrease in value of our imports of raw silk, but these were more than offset by increases in both the quantity and value of imports of hides and skins, furs, and unmanufactured tobacco.

Table 16.—Imports of Leading Commodities

[Values in millions and tenths of millions of dollars]

Commodity	Quantity				Value			
	1910–1914 [1]	1921–1925	1926	1927	1910–1914 [1]	1921–1925	1926	1927
Silk, raw, million lbs.	24	52	66	74	77.1	348.1	392.8	390.4
Rubber, crude, do.	106	681	926	955	86.3	192.9	505.8	339.9
Coffee, do.	899	1,340	1,493	1,433	101.5	205.8	322.7	264.3
Sugar, cane, do.	4,341	8,118	9,420	8,431	103.5	295.4	232.5	258.2
Paper and manufactures					10.7	105.2	139.5	149.4
Newsprint, million lbs.	238	2,375	3,701	3,974	4.8	90.9	124.0	131.5
Furs and manufactures					22.6	79.8	117.4	135.6
Paper base stocks					27.5	94.2	121.5	113.6
Wood pulp, thousand tons	472	1,165	1,546	1,496	14.6	67.0	91.2	85.8
Petroleum and products					6.3	90.8	124.6	113.4
Crude oil, million bbls.	7	95	60	58	5.9	68.0	79.3	78.6
Refined oils, do.		13	21	13		22.2	44.6	33.6
Hides and skins, million lbs.	531	430	369	447	104.6	93.1	96.8	112.8
Tin: Bars, blocks, pigs, do.	106	132	173	159	41.5	56.5	104.8	100.9
Copper, including manufactures, do.	369	598	779	718	47.8	77.8	99.7	85.0
Fruits and nuts					42.3	75.5	87.3	84.5
Wool and mohair, million lbs.	208	340	310	267	39.3	102.4	106.7	82.9
Wool manufactures, including yarn, etc.					21.5	64.6	70.7	78.8
Vegetable oils, expressed, million lbs.	267	613	780	773	26.5	59.7	79.1	78.7
Tobacco, unmanufactured, do.	56	67	68	103	31.7	64.8	60.6	74.6
Burlaps, do.	421	559	599	570	29.4	60.4	82.2	67.2
Cotton manufactures, including yarn, etc.					67.4	86.6	67.2	66.2
Oilseeds, million lbs.	491	1,393	1,906	1,832	15.1	51.2	70.5	64.3
Flaxseed, thousand bush.	7,258	16,934	22,550	21,821	12.3	34.0	41.4	37.8
Sawmill products					22.1	68.4	74.6	64.0
Boards, planks, deals, million bd. ft.	971	1,593	1,899	1,745	17.6	49.8	55.4	49.5
Art works					35.0	31.2	53.5	60.4
Fertilizers, thousand tons	1,488	1,609	2,083	1,819	40.7	56.9	69.2	58.8
Chemicals (coal-tar, industrial, medicinal)					41.6	44.2	54.0	57.8
Cocoa or cacao beans, million lbs.	142	365	426	425	16.0	31.3	42.7	56.8
Diamonds, thousand carats		639	834	717	34.7	52.6	66.4	54.4
Flax, hemp, ramie manufactures					31.8	44.8	48.5	52.4
Cotton, unmanufactured, million lbs.	111	166	181	206	20.7	46.3	46.2	45.7
Silk manufactures					29.9	40.9	40.6	42.2
Vegetables and preparations					14.4	26.2	38.4	38.4
Tea, million lbs.	95	94	96	89	16.7	25.3	31.3	28.2

[1] Fiscal years ended June 30.

Imports of crude foodstuffs declined in value by 6.5 per cent as compared with 1926 although larger than in any other years except 1919 and 1920, when the level of prices was much higher. The decrease in 1927 was caused by a decline in value of coffee imports amounting to $58,000,000, the result of a moderate reduction in the quantity im-

ported and a sharp decrease in the average price per pound. Imports of tea were also smaller both in quantity and value, whereas the value of cocoa imports increased by one-third in consequence of a marked advance in the price.

Table 17.—Per Cent Change in the Leading Imports and Percentages Which Each Forms of the Total Value of Imports

Commodity	Quantity			Value					
	Per cent change in 1927 from—			Per cent change in 1927 from—			Per cent of total imports		
	1910–1914 [1]	1921–1925	1926	1910–1914 [1]	1921–1925	1926	1910–1914 [1]	1921–1925	1927
Silk, raw	+211.0	+42.0	+11.4	+406.6	+12.1	−0.6	4.6	10.1	9.3
Rubber, crude	+803.0	+40.2	+3.1	+293.6	+76.2	−32.8	5.1	5.6	8.1
Coffee	+59.4	+6.9	−4.0	+160.5	+28.4	−18.1	6.0	6.0	6.3
Sugar, cane	+94.2	+3.9	−10.5	+149.4	−12.6	+11.0	6.1	8.6	6.2
Paper and manufactures				+1,298.5	+41.9	+7.1	.6	3.1	3.6
Newsprint	+1,568.1	+67.3	+7.4	2,637.1	+44.7	+6.1	.3	2.6	3.1
Furs and manufactures				+499.1	+69.8	+15.5	1.4	2.3	3.2
Paper base stocks				+312.9	+20.6	−6.5	1.6	2.7	2.7
Wood pulp	+217.1	+28.4	−3.2	+486.7	+28.1	−5.9	.9	1.9	2.1
Petroleum and products				+1,714.4	+24.9	−8.9	.4	2.6	2.7
Crude oil	+881.2	−38.5	−3.3	+1,816.1	+15.6	−.9	.3	2.0	1.9
Refined oils		+5.9	−36.5		+51.4	−24.6		.6	.8
Hides and skins	−15.8	+4.0	+21.3	+7.9	+21.3	+16.6	6.2	2.7	2.7
Tin: Bars, blocks, pigs	+50.1	+20.6	−7.8	+143.0	+78.5	−3.7	2.5	1.6	2.4
Copper, including manufactures	+94.7	+20.1	−7.8	+77.6	+9.2	−14.8	2.8	2.3	2.0
Fruits and nuts				+99.8	+11.9	−3.3	2.5	2.2	2.0
Wool and mohair	+28.7	−21.4	−13.9	+111.2	−19.0	−22.3	2.3	3.0	2.0
Wool manufactures, incl. yarns, etc				+266.0	+22.0	+11.5	1.3	1.9	1.9
Vegetable oils, expressed	+190.1	+26.2	−.8	+196.6	+31.9	−.5	1.6	1.7	1.9
Tobacco, unmanufactured	+84.1	+53.5	+51.3	+135.3	+15.1	+23.2	1.9	1.9	1.8
Burlaps	+35.2	+1.9	−4.9	+128.6	+11.3	−18.2	1.7	1.8	1.6
Cotton manufactures, incl. yarn, etc				−1.8	−23.5	−1.4	4.0	2.5	1.6
Oilseeds	+273.4	+31.5	−3.9	+324.9	+25.5	−8.8	.9	1.5	1.5
Flaxseed	+200.6	+28.9	−3.2	+206.6	+11.1	−8.7	.7	1.0	.9
Sawmill products				+190.1	−6.4	−14.2	1.3	2.0	1.5
Boards, planks, deals	+79.7	+9.5	−8.1	+180.9	−.6	−10.6	1.0	1.4	1.2
Art works				+72.4	+93.5	+13.0	2.1	.9	1.4
Fertilizers	+22.2	+13.1	−12.7	+44.5	+3.5	−15.0	2.4	1.6	1.4
Chemicals (coal-tar, industrial, medicinal)				+38.9	+30.8	+7.0	2.5	1.3	1.4
Cocoa or cacao beans	+199.7	+16.5	−.3	+254.9	+81.4	+32.9	.9	.9	1.4
Diamonds		+12.2	−14.0	+56.8	+3.3	−18.1	2.1	1.5	1.3
Flax, hemp, ramie manufactures				+64.6	+17.0	+7.8	1.9	1.3	1.3
Cotton, unmanufactured	+85.3	+23.9	+13.4	+121.1	−1.3	−1.2	1.2	1.3	1.1
Silk manufactures				+41.1	+3.0	+3.9	1.8	1.2	1.0
Vegetables and preparations				+166.8	+46.8	+.1	.9	.8	.9
Tea	−6.3	−5.6	−7.0	+68.5	+11.5	−10.1	1.0	.7	.7

[1] Fiscal years ended June 30.

The third group of imports which declined in value during 1927 was semimanufactured articles. The total imports of this class of merchandise were 6.8 per cent smaller than in 1926 as a result of a reduction in both the quantity and value of each of the more important commodities in the group—wood pulp, boards and planks, copper, diamonds, sodium nitrate, and tin.

Manufactured foodstuffs, which consist almost entirely of sugar, was the only class of imports to show a considerable increase in value dur-

ing the past year. The actual quantity of sugar imported into the United States from foreign countries was 10 per cent smaller than in 1926, but the value increased by 11 per cent and was higher than in any year since 1924.

Imports of finished manufactures reached the largest aggregate value in 1927 of any year on record, although their increase over 1926 was relatively small. Of the more important commodities included in this class, newsprint, flax manufactures, woolen goods, and silk manufactures show moderate increases in value, while imports of cotton manufactures and burlaps were smaller.

Of the list of 31 leading imports shown in Tables 16 and 17, 19 decreased in value during 1927 while 12 showed increases. Decreases in quantity were also quite general among the leading imports, amounting to 16 out of the total of 22, for which quantities are available. The total number of 160 commodities included in the import index (see Table 6), however, showed a quantitative increase of 1. 4 per cent.

Table 19 shows the value of imports by country of origin, for a number of the principal commodities.

GEOGRAPHICAL DISTRIBUTION OF FOREIGN TRADE

The growth in export trade in 1927 and the recession in import values were accompanied by noteworthy changes in the geographic distribution of foreign commerce. Exports to Canada and other northern North America increased $97,000,000 in 1927 as compared with 1926, which together with small increases in export values to Europe and Africa much more than counterbalanced the reduction in exports to Latin America and the Far East. The decline in value of imports was distributed among all the grand divisions but most of the decrease was confined to the trade with the Far East and Latin America and resulted from lower prices of rubber and coffee. Europe again ranked first among the continents in the value of imports furnished us, a position which was held by Asia in 1925 and 1926.

Distribution of Foreign Trade by Continents.

Europe has always taken a much larger share of our exports than any other continent but in 1927, for the second consecutive year, took less than one-half of the total (see Table 20 and Chart X). The proportion of our exports going to Europe has diminished from 75 per cent at the beginning of the present century to 47½ per cent in 1927. This rather steady decrease has taken place in spite of a substantial growth in the value of our exports to Europe which emphasizes the expansion of our trade with non-European countries.

Table 18.—Principal Exports of the United States by Leading Countries of Destination

[Values in thousands of dollars]

Commodity and country	1910–1914	1926	1927
Hams, shoulders, and bacon	**44,993**	**71,651**	**42,004**
Canada	1,451	1,924	1,581
Cuba	1,627	5,020	4,521
Germany	152	1,405	1,064
Norway	459	960	291
Sweden	227	1,160	149
United Kingdom	35,633	55,715	28,765
Finland	[1] 484	775	601
Condensed and evaporated milk	**1,277**	**13,853**	**12,700**
Cuba	526	2,246	1,683
United Kingdom	23	2,755	2,995
Philippine Islands	176	2,581	2,608
China, Hong Kong, Kwantung	80	1,652	1,446
Japan	38	806	1,130
Lard	**52,098**	**108,600**	**92,035**
Canada	1,180	1,874	1,979
Mexico	795	7,522	6,343
Cuba	4,601	12,037	10,841
Colombia	191	2,591	1,650
Peru	324	1,865	1,196
Belgium	1,852	1,728	1,688
Germany	15,683	30,910	24,329
Netherlands	4,052	7,208	5,035
United Kingdom	18,403	34,766	29,573
Poland and Danzig	-------	970	1,890
Italy	492	905	1,628
Undressed furs	**[1]17,465**	**19,191**	**25,519**
Canada	[1] 2,768	5,006	6,585
Germany	[1] 6,184	3,380	5,768
United Kingdom	[1] 7,307	7,682	11,174
Barley, grain	**5,073**	**10,371**	**35,432**
Canada	38	1,366	8,600
Germany	914	894	9,874
United Kingdom	3,300	6,380	11,994
Corn, grain	**25,231**	**19,840**	**11,432**
Canada	5,200	7,403	6,466
Mexico	1,811	3,982	1,013
Cuba	1,640	1,714	1,463
Netherlands	3,178	2,538	520
United Kingdom	6,805	1,876	739
Rye, grain	**598**	**12,282**	**39,677**
Canada	23	8,301	28,425
Germany	65	606	2,192
Netherlands	141	834	2,649
Norway	-------	1,339	778
Wheat, grain	**55,063**	**201,739**	**239,504**
Canada	1,742	37,566	67,180
Belgium	7,135	10,015	16,852
France	2,979	13,290	18,238
Germany	6,088	10,473	7,843
Irish Free State	-------	6,954	4,798
Netherlands	8,244	21,759	20,533
United Kingdom	20,463	55,215	60,694
Italy	2,411	12,293	16,275
Greece	64	3,099	6,684
Japan	1,994	11,040	5,339
Wheat flour	**51,127**	**83,133**	**85,332**
Central America	2,225	4,267	4,290
Cuba	4,246	8,734	8,692
Other West Indies	4,406	4,911	4,891
Brazil	3,016	7,574	6,036
Denmark	1,287	2,301	3,565
Germany	991	4,554	4,369
Netherlands	4,290	8,279	9,910
United Kingdom	13,753	9,498	9,347
Finland	[1] 2,060	3,462	3,574
Philippine Islands	1,126	4,137	3,882
China, Hong Kong, Kwantung	5,589	6,857	8,705
Cottonseed cake and meal	**12,557**	**13,806**	**15,963**
Denmark	4,385	5,419	9,076
Germany	4,448	4,508	3,430
Linseed cake and meal	**10,044**	**12,394**	**13,832**
Belgium	4,243	2,678	4,667
Netherlands	4,382	8,912	7,878

Commodity and country	1910–1914	1926	1927
Apples (fresh)	**5,670**	**30,474**	**30,188**
Canada	694	1,456	1,357
Argentina	48	1,019	1,234
Brazil	69	693	406
Denmark	35	760	1,086
Germany	699	2,418	3,563
United Kingdom	3,650	19,672	18,091
Raisins and prunes	**5,785**	**21,813**	**24,916**
Canada	1,226	3,907	3,481
France	723	1,515	1,630
Germany	1,450	2,926	4,282
United Kingdom	682	6,715	7,362
Canned fruits	**3,964**	**22,684**	**22,627**
Canada	305	1,383	1,516
Germany	115	616	1,427
United Kingdom	2,716	16,547	15,583
Automobile tires (casings)	**[2]13,422**	**24,359**	**33,787**
Cuba	[2] 1,020	1,354	1,321
Argentina	[2] 739	2,818	3,254
Brazil	[2] 212	944	1,773
Denmark	[2] 259	567	1,387
Germany	[2] 12	1,622	2,296
Sweden	[2] 510	806	1,196
United Kingdom	[2] 2,974	2,516	2,708
Spain	[2] 271	676	1,283
Philippine Islands	[2] 446	834	1,394
Australia	[2] 225	1,185	1,368
Rosin and turpentine	**23,074**	**35,269**	**32,579**
Canada	1,061	2,092	1,715
Argentina	996	2,511	2,015
Brazil	1,152	2,609	2,560
Germany	5,431	6,017	6,579
Netherlands	2,658	1,691	2,478
United Kingdom	6,305	11,177	9,082
Japan	198	2,028	1,306
Leaf tobacco	**44,788**	**136,676**	**139,405**
Canada	2,346	4,239	4,208
France	4,083	4,256	3,603
Germany	4,585	5,416	5,915
Netherlands	2,426	5,602	4,395
United Kingdom	15,760	67,340	79,278
China	1,085	20,542	9,344
Japan	440	2,379	4,290
Australia	2,185	8,895	7,278
Cigarettes	**2,823**	**17,898**	**13,837**
Panama	97	1,073	1,184
British Malaya	1,211	1,268	1,008
Philippine Islands	27	1,120	1,129
China, Hong Kong, Kwantung	992	12,114	7,733
Cotton, unmanufactured	**551,890**	**814,429**	**826,318**
Canada	9,632	21,439	20,879
Belgium	10,689	22,039	23,816
France	68,783	95,581	93,468
Germany	154,456	175,114	230,695
United Kingdom	221,708	208,358	140,167
Soviet Russia in Europe	5,508	32,783	39,226
Italy	31,293	76,594	60,647
Spain	17,147	29,739	29,744
British India	-------	5,672	17,764
Japan	18,548	107,860	122,922
Cotton cloth	**27,052**	**69,556**	**69,971**
Canada	1,615	6,660	6,870
Mexico	294	2,705	1,928
Central America	2,068	6,667	7,065
Cuba	1,467	9,404	9,826
Haiti	1,500	2,229	3,309
Argentina	184	3,126	3,942
Colombia	963	4,316	3,487
Chile	731	2,996	2,517
Philippine Islands	4,187	13,180	11,155
Boards, etc.—southern pine	**[1]24,894**	**25,779**	**30,354**
Mexico	[1] 1,445	2,285	1,888
Cuba	[1] 2,476	3,060	3,167

[1] Year ended June 30, 1913. [2] Year ended Dec. 31, 1921. Data are not shown separately for earlier years.

Table 18.—Principal exports, etc.—Continued

[Values in thousands of dollars]

Commodity and country	1910–1914	1926	1927
Boards, etc. southern pine			
Other West Indies	[1] 953	2,072	2,072
Argentina	[1] 4,187	6,210	8,288
Uruguay	[1] 854	769	1,130
Germany	[1] 1,434	1,241	2,256
Netherlands	[1] 2,382	1,057	2,444
United Kingdom	[1] 1,324	2,110	2,251
Spain	[1] 635	1,199	1,353
Boards, etc.—Douglas fir	[1] 8,651	15,273	15,379
Peru	[1] 602	1,549	1,366
United Kingdom	[1] 350	614	1,167
China, Hong Kong, Kwantung	[1] 1,068	2,679	1,537
Japan	[1] 197	3,760	3,550
Australia	[1] 2,291	2,039	2,134
Boards, etc.—oak	[1] 13,378	12,188	13,773
Canada	[1] 2,877	2,996	3,086
Argentina	[1] 303	799	1,081
United Kingdom	[1] 7,358	6,483	7,463
Coal, anthracite	18,183	41,086	32,928
Canada	17,885	40,274	32,131
Coal, bituminous	34,455	155,819	71,329
Canada	23,961	52,203	55,621
Panama	1,267	2,052	1,782
Cuba	2,835	2,494	2,740
Argentina	245	5,109	1,138
Brazil	584	6,522	1,975
Italy	1,014	8,108	1,724
Crude petroleum	6,382	28,496	25,944
Canada	1,979	24,281	21,579
Cuba	354	1,177	1,303
Japan	-------	1,536	1,905
Gasoline and naphtha	16,735	263,200	210,370
Canada	3,511	13,257	12,002
Argentina	1,890	5,773	7,129
Brazil	765	8,546	6,780
Belgium	561	5,852	5,131
Denmark	200	4,379	4,948
France	1,770	41,366	28,147
Germany	880	9,045	5,658
Netherlands	855	9,843	7,336
Sweden	154	4,095	5,589
United Kingdom	2,207	83,815	63,089
Australia	967	16,929	14,625
New Zealand	656	9,383	7,138
Illuminating oil	64,098	100,353	78,874
Brazil	2,989	4,419	4,237
France	2,758	6,420	3,014
Netherlands	6,222	5,625	4,672
United Kingdom	8,511	9,939	8,812
British India	2,651	5,764	3,949
China, Hong Kong, Kwantung	7,202	17,969	14,649
Japan	4,659	13,690	7,437
Australia	2,447	4,039	4,070
British Africa	1,482	4,159	4,207
Fuel and gas oil	[1] 8,306	45,354	49,944
Canada	[1] 1,774	5,386	2,864
Mexico	[1] 40	974	1,160
Panama	[1] 596	5,647	7,481
Argentina	[1] 35	2,250	3,883
Chile	[1] 924	4,289	3,881
Germany	[1] 109	1,694	2,154
United Kingdom	[1] 3,707	9,272	8,283
Japan	-------	2,214	4,032
Lubricating oil	25,270	86,823	89,333
Canada	875	3,132	3,669
Argentina	817	3,414	5,022
Belgium	1,456	4,353	4,830
France	2,901	12,044	9,128
Germany	2,949	6,005	7,860
United Kingdom	6,490	17,026	15,534
Italy	1,019	4,686	4,136
British India	954	3,291	3,808
Japan	553	2,413	2,920
Australia	613	5,019	5,244
Iron and steel plates, not fabricated	[1] 9,239	7,157	6,339
Canada	[1] 6,706	6,361	5,593
Iron and steel sheets, galvanized	[1] 7,653	18,392	15,498
Canada	[1] 2,429	3,143	2,793
Cuba	[1] 362	1,245	1,134
Argentina	[1] 514	982	916
Brazil	[1] 102	1,045	1,071
Colombia	[1] 182	819	996
Netherland East Indies	[1] 87	1,418	1,358
Philippine Islands	[1] 522	2,664	2,028
Steel sheets, black	[1] 5,369	14,195	12,188
Canada	[1] 3,917	5,144	4,697
Japan	[1] 69	6,983	4,891
Tinplate, terneplate, taggers tin	3,816	28,766	29,062
Canada	2,400	5,902	5,249
Mexico	101	1,021	1,315
Argentina	133	1,856	3,606
Brazil	101	624	1,027
Italy	-------	1,162	997
British India	163	1,670	982
China, Hong Kong, Kwantung	441	2,812	2,463
Japan	100	5,629	6,538
Copper (ingots, bars, rods)	[1] 127,883	128,088	134,248
Canada	[1] 5,743	4,017	4,567
Belgium	[1] 1,301	11,475	11,937
France	[1] 19,445	25,244	15,143
Germany	[1] 41,179	21,803	30,327
Netherlands	[1] 26,022	9,085	14,809
United Kingdom	[1] 17,139	28,498	28,692
Italy	[1] 7,373	11,718	11,760
Japan	[1] 2	5,279	3,208
Lead (pigs, bars)	[3] 7,927	9,412	12,424
Germany	[3] 175	2,301	3,170
United Kingdom	[3] 3,457	2,058	3,845
Japan	[3] 382	1,865	1,767
Typewriters	10,310	18,198	20,856
Argentina	357	795	1,074
Brazil	252	752	692
Czechoslovakia	-------	457	631
France	1,034	1,836	2,033
Germany	1,147	686	1,051
United Kingdom	2,375	2,980	3,421
Italy	370	883	642
Spain	111	688	873
British India	187	627	814
Australia	381	808	763
Wheel tractors	[4] 6,521	28,282	33,891
Canada	[4] 4,734	6,824	12,421
Germany	[4] 390	575	2,178
United Kingdom	[4] 20	1,220	1,172
Soviet Russia in Europe	[4] 249	4,475	2,782
Italy	[4] 3	3,171	1,680
Australia	[4] 93	2,840	2,547
Automobiles (passenger)	[1] 24,276	176,432	207,962
Canada	[1] 8,229	20,233	26,424
Argentina	[1] 1,182	16,955	21,357
Brazil	[1] 1,035	10,192	9,284
Belgium	[1] 86	6,338	12,220
Denmark	[1] 77	5,749	8,490
Germany	[1] 764	3,439	8,497
United Kingdom	[1] 2,907	4,821	8,868
Spain	[1] 128	5,013	7,709
Australia	[1] 1,897	33,986	26,686
British South Africa	[1] 1,158	11,703	12,911
Motor trucks	[1] 1,737	47,176	69,913
Canada	[1] 1,004	4,132	5,773
Argentina	[1] 78	2,210	7,248
Denmark	[1] 2	1,444	3,430
United Kingdom	[1] 119	3,019	2,708
Australia	[1] 23	10,343	14,361
British Africa	[1] 9	2,493	4,842

[1] Year ended June 30, 1913. [3] Year ended June 30, 1915. Data are not shown separately for earlier years.
[4] Gasoline, steam, and other power-traction engines for year ended June 30, 1913.

Table 19.—Principal Imports of the United States by Leading Countries of Origin

[Values in thousands of dollars]

Commodity and country	1910–1914	1926	1927
Cheese	**8,795**	**21,084**	**24,500**
Canada	45	2,037	2,556
France	839	1,349	1,414
Switzerland	2,958	5,218	5,938
Italy	3,950	10,348	12,176
Cattle hides	**42,469**	**22,092**	**41,360**
Canada	4,691	4,335	6,469
Colombia	952	959	1,007
Argentina	12,782	12,237	22,892
Uruguay	2,274	1,182	989
France	2,830	452	991
Australia	592	223	1,358
Kip and calf skins	**21,665**	**11,590**	**13,109**
Canada	1,121	1,539	2,105
France	1,148	1,505	2,402
Germany	4,941	1,554	1,796
Latvia	-------	831	906
Sheep and lamb skins	**11,025**	**18,791**	**16,148**
Argentina	610	2,812	2,679
United Kingdom	5,030	3,192	2,909
New Zealand	750	5,032	4,013
Goat and kid skins	**24,575**	**38,084**	**35,488**
Mexico	1,965	1,806	2,053
Argentina	1,360	1,359	1,533
Brazil	2,043	2,539	3,189
Spain	211	2,224	1,298
British India	8,034	14,100	13,916
Netherland East Indies	150	1,885	1,767
China	2,613	6,020	4,868
Leather gloves	**8,078**	**8,918**	**10,569**
France	3,334	4,029	4,964
Germany	3,281	3,124	3,030
Furs, undressed	**14,767**	**107,250**	**123,630**
Canada	2,044	11,927	14,515
Argentina	11	3,588	5,020
Belgium	1,186	5,474	6,013
France	782	4,478	6,438
Germany	5,480	8,881	12,952
United Kingdom	3,190	21,851	20,720
Latvia	-------	3,819	2,250
Soviet Russia in Europe	658	4,159	1,839
China	133	15,101	22,890
Australia	650	11,829	10,972
Wheat, grain	**1,032**	**19,691**	**15,344**
Canada	1,001	19,687	15,332
Bananas	**14,254**	**31,684**	**34,269**
Mexico	302	2,658	3,380
Central America	7,644	18,877	20,644
Jamaica	4,309	6,557	7,263
Olive oil, edible	**6,342**	**13,901**	**17,577**
France	1,421	786	1,393
Italy	4,264	9,882	11,245
Spain	282	2,944	4,296
Cocoa or cacao beans	**16,009**	**42,749**	**56,816**
Dominican Republic	2,706	4,258	7,947
British West Indies and Bermudas	4,242	5,352	4,918
Venezuela	612	1,747	2,020
Brazil	1,775	8,814	13,561
Ecuador	1,911	3,355	3,068
Germany	413	1,695	2,810
British West Africa	1	12,847	17,094
Coffee	**101,455**	**322,746**	**264,275**
Mexico	4,522	7,206	6,162
Central America	4,383	20,148	9,918
Colombia	7,849	74,279	65,585
Venezuela	5,736	12,829	9,621
Brazil	73,424	199,663	164,773

Commodity and country	1910–1914	1926	1927
Tea	**16,732**	**31,349**	**28,192**
United Kingdom	3,181	8,173	8,267
British East Indies	1,721	9,152	8,708
Netherland East Indies	25	3,220	1,993
China	2,898	3,016	2,407
Japan	7,957	6,898	5,890
Sugar (cane)	**103,517**	**232,530**	**258,155**
Cuba	91,686	198,895	207,437
Philippine Islands	5,827	29,606	47,598
Rubber (crude)	**86,345**	**505,818**	**339,875**
Brazil	29,991	11,845	9,699
United Kingdom	27,511	33,536	26,743
British Malaya	2,949	314,878	203,828
Ceylon	4,209	44,863	30,608
Netherland East Indies	90	87,157	62,817
Copra	**1,807**	**23,513**	**20,641**
British Malaya	30	5,172	2,577
Philippine Islands	1,183	14,037	15,113
French Oceania	428	1,574	1,374
Flaxseed	**12,324**	**41,383**	**37,780**
Canada	6,435	6,341	4,847
Argentina	3,578	34,936	32,853
Chinese wood oil	[1] 2,734	**9,148**	**11,810**
China	[1] 2,659	8,811	9,670
Coconut oil	**4,445**	**22,088**	**22,900**
Philippine Islands	372	22,088	22,900
Tobacco, leaf	**31,695**	**60,079**	**74,073**
Cigar leaf (wrapper)	7,407	14,747	12,438
Netherlands	7,140	14,406	12,100
Cigar leaf (filler)	[2] 24,288	22,616	20,178
Cuba	[2] 15,006	22,528	19,955
Cigarette leaf	[3]	22,519	41,207
Italy	-------	4,369	7,214
Greece	[2] 235	11,420	23,118
Turkey in Europe and Asia	[2] 7,857	5,530	[3] 9,894
Cotton, unmanufactured	**20,651**	**46,240**	**45,669**
Mexico	824	5,934	2,941
Peru	957	1,616	2,278
United Kingdom	1,590	2,088	4,688
British India	278	1,894	1,614
China	925	2,275	3,821
Egypt	15,874	32,205	30,008
Cotton cloth	**9,041**	**16,258**	**15,594**
Czechoslovakia	-------	1,166	968
France	1,649	851	1,045
Switzerland	306	1,047	2,063
United Kingdom	6,261	12,135	10,548
Burlaps	**29,421**	**82,238**	**67,249**
United Kingdom	5,049	8,513	7,103
British India	24,084	70,734	56,783
Carpet wool	**14,810**	**30,103**	**37,470**
Argentina	502	1,349	2,256
United Kingdom	3,723	12,570	10,819
Iraq	-------	737	2,214
Syria	-------	1,915	2,731
British India	500	1,580	2,591
China	4,068	5,906	11,327
Clothing wool	**19,497**	**5,371**	**6,020**
Canada	31	422	867
Argentina	4,662	618	682
United Kingdom	7,535	1,397	1,605
Australia	4,370	1,657	1,887
Combing wool	**4,952**	**65,915**	**38,265**
Argentina	176	10,552	4,130
Uruguay	13	12,548	5,106
United Kingdom	3,616	7,522	6,201
Australia	8	22,889	16,964

[1] Year ended June 30, 1913. [2] Leaf tobacco other than "cigar leaf wrapper." [3] See note 2.

Table 19.—Principal Imports of the United States by Leading Countries of Origin—Continued

[Values in thousands of dollars]

Commodity and country	1910–1914	1926	1927
Woolen and worsted cloths	12,578	20,869	22,059
France	433	1,562	2,634
Germany	1,475	1,670	1,536
United Kingdom	3,987	16,372	16,642
Carpets and rugs	4,320	21,099	21,503
United Kingdom	448	1,787	2,074
Greece	4	440	1,147
Turkey in Europe and Asia	2,029	2,200	2,970
Persia	1,218	7,356	6,845
China	27	5,485	4,042
Silk, raw	77,058	392,760	390,365
France	704	667	279
Italy	10,007	6,480	2,716
China	12,839	50,118	49,775
Japan	52,641	328,903	334,160
Silk fabrics (broad, except pile fabrics)	9,068	18,627	17,862
France	4,699	3,257	3,881
Switzerland	1,172	1,578	1,797
Italy	267	711	1,211
China	101	1,479	1,127
Japan	2,172	10,029	7,856
Silk wearing apparel	4,620	8,334	8,479
France	2,648	5,826	6,025
Artificial silk yarn, thread, and filaments	[1] 2,385	9,051	13,628
Germany	[1] 592	2,608	2,523
Netherlands	[4] 5	2,428	2,163
Italy	[1] 34	1,911	5,613
Boards, planks, deals	17,622	55,363	49,497
Canada	16,912	52,774	45,884
Philippine Islands (cabinet wood)	52	1,225	1,634
Pulpwood	6,399	14,176	16,484
Canada	6,399	14,104	16,153
Chemical wood pulp	11,432	82,953	79,380
Canada	1,994	35,162	32,428
Germany	2,649	5,623	3,660
Norway	3,068	5,856	5,619
Sweden	3,154	29,203	31,164
Finland	83	5,015	4,858
Standard newsprint	4,804	123,982	131,489
Newfoundland and Labrador	[5] 42	6,131	5,821
Canada	4,393	111,924	118,731
Sweden	19	2,749	3,858
Finland	-------	2,026	1,678
Crude petroleum	4,937	79,308	78,609
Mexico	4,013	46,778	30,442
Netherland West Indies	-------	9,690	14,229
Colombia	-------	7,264	13,559
Peru	289	7,029	4,157
Venezuela	-------	6,870	14,946
Gasoline and naphtha	[4] 2	24,553	22,773
Mexico	[4] 2	10,600	6,989
Netherland West Indies	-------	11,952	12,316
Decorated china and porcelain	8,808	10,349	10,498
France	1,435	673	1,215
Germany	3,530	3,354	3,549
Japan	1,236	4,388	3,662
Diamonds (cut, not set)	24,699	51,362	40,736
Belgium	10,294	20,876	15,973
Netherlands	9,655	27,079	21,317
Copper ore, concentrates, unrefined pigs, etc	[1] 58,279	75,166	70,952
Canada	[1] 8,366	13,300	11,943
Mexico	[1] 19,473	14,458	14,189
Cuba	[1] 678	2,484	3,695
Chile	[1] 6,654	8,289	11,811
Peru	[1] 6,520	10,175	10,873
Spain	[1] 6,553	4,906	1,027
Africa	[1] 456	16,858	14,236
Refined copper	([6])	23,336	13,105
Chile	([6])	22,884	12,786
Lead ore, matte, bullion	3,380	16,897	16,380
Mexico	3,088	14,922	15,368
Tin (bars, blocks, pigs)	41,511	104,793	100,865
Netherlands	1,105	10,421	11,405
United Kingdom	22,678	29,330	19,285
British Malaya	14,853	56,327	64,026
Sodium nitrate	17,615	42,781	30,132
Chile	17,069	41,885	29,459
Potash fertilizers	[1] 12,485	14,123	13,424
France	-------	3,684	592
Germany	[1] 12,443	9,127	8,881

[1] Year ended June 30, 1913.
[4] Year ended June 30, 1914.
[5] Year ended June 30, 1910.
[6] Not shown separately.

Canada and other northern North America took 17.4 per cent of our total exports during 1927 as compared with 15.5 per cent in 1926 and 14.3 per cent for the period 1921–1925 and Africa's share advanced to 2.2 per cent. Exports to Latin America and to the Far East were 17.4 per cent and 15.3 per cent, respectively, the ratios decreasing slightly from a year earlier, although greater than for the period 1921–1925.

Europe supplied 30.5 per cent of our total imports in 1927, taking first place among the continents, while the ratio imported from Asia was 30 per cent, which was lower than in the two preceding years, when Asia had ranked first. This change in relative position was the result of a sharp decline in the price of rubber, which greatly

reduced the value of the trade with Asia. Imports from South America, which constitute about one-eighth of the total, declined in relative importance in 1927, largely as the result of the lower price paid for Brazilian coffee. The share of both the northern and southern regions of North America in the import trade of the United States was slightly larger than in 1926.

Table 20.—Foreign Trade by Continents and Great Trade Regions

(Data cover period beginning July 1, 1876, and ending Dec. 31, 1927. Hawaiian Islands are included in Oceania prior to 1901; the Philippine Islands are included in Asia for all years)

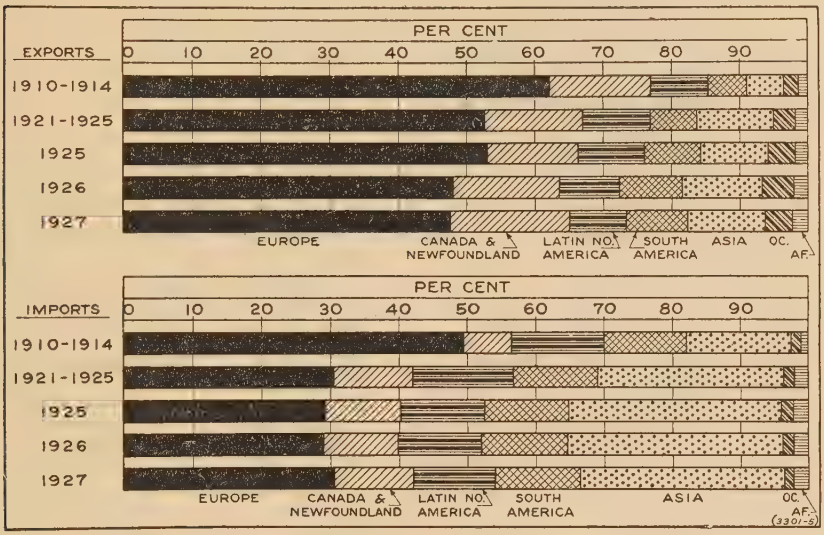
[Values in millions of dollars]

Yearly average or year	Total	North America				South America		Europe		Asia		Oceania		Africa	
		Northern		Southern											
		Value	Per cent	Value	Per cent	Value	Per cent	Value	Per cent	Value	Per cent	Value	Per cent	Value	Per cent
EXPORTS															
1876–1880	677	34	5.0	36	5.4	22	3.3	562	83.1	11	1.7	7	1.1	4	0.6
1881–1885	792	43	5.4	45	5.7	28	3.6	642	81.0	18	2.2	13	1.6	4	.5
1886–1890	738	39	5.2	43	5.8	32	4.3	586	79.3	20	2.8	15	2.0	3	.5
1891–1895	892	49	5.5	61	6.8	33	3.7	709	79.5	21	2.3	14	1.6	5	.6
1896–1900	1,157	80	6.9	65	5.6	36	3.1	887	76.7	45	3.9	26	2.3	17	1.5
1901–1905	1,454	125	8.6	98	6.7	46	3.2	1,051	72.3	77	5.3	30	2.0	28	1.9
1906–1910	1,779	181	10.2	155	8.7	82	4.6	1,213	68.2	97	5.5	32	1.8	18	1.0
1911–1915	2,371	337	14.2	182	7.7	122	5.2	1,517	64.0	133	5.6	52	2.2	27	1.1
1915–1920 [1]	6,521	780	12.0	503	7.7	361	5.5	4,124	63.2	562	8.6	109	1.7	82	1.3
1921–1925	4,397	627	14.3	445	10.1	297	6.8	2,318	52.7	499	11.3	141	3.2	70	1.6
1910–1914 (fiscal)	2,166	320	14.8	181	8.4	121	5.6	1,350	62.3	121	5.6	48	2.2	25	1.1
1913 (calendar)	2,484	409	16.5	192	7.7	147	5.9	1,500	60.4	154	6.2	54	2.2	29	1.2
1921	4,485	600	13.4	529	11.8	273	6.1	2,364	52.7	533	11.9	113	2.5	73	1.6
1922	3,832	583	15.2	332	8.7	226	5.9	2,083	54.4	449	11.7	102	2.7	56	1.5
1923	4,167	661	15.8	426	10.2	269	6.5	2,093	50.2	511	12.3	146	3.5	61	1.5
1924	4,591	634	13.8	456	9.9	314	6.8	2,445	53.3	515	11.2	157	3.4	70	1.5
1925	4,910	659	13.4	480	9.8	403	8.2	2,604	53.0	487	9.9	189	3.9	89	1.8
1926	4,809	748	15.5	429	8.9	444	9.2	2,310	48.0	565	11.7	213	4.4	101	2.1
1927	4,865	845	17.4	408	8.4	438	9.0	2,314	47.6	560	11.5	194	4.0	107	2.2
IMPORTS															
1876–1880	493	28	5.6	87	17.6	68	13.8	248	50.3	56	11.3	5	.9	2	.5
1881–1885	667	42	6.3	96	14.4	76	11.4	368	55.1	70	10.5	11	1.7	4	.6
1886–1890	717	40	5.6	99	13.8	82	11.5	402	56.0	74	10.4	16	2.3	3	.5
1891–1895	785	36	4.6	128	16.3	117	14.9	398	50.6	85	10.8	16	2.1	5	.6
1896–1900	742	37	5.0	76	10.3	98	13.2	390	52.6	108	14.6	23	3.1	10	1.3
1901–1905	972	53	5.4	130	13.3	122	12.5	498	51.3	150	15.4	9	.9	11	1.1
1906–1910	1,345	80	5.9	180	13.4	157	11.7	690	51.3	205	15.2	17	1.2	17	1.2
1911–1915	1,712	131	7.7	249	14.5	220	12.8	798	46.6	271	15.8	19	1.1	24	1.4
1915–1920 [1]	3,358	425	12.7	588	17.5	591	17.6	682	20.3	910	27.1	70	2.1	91	2.7
1921–1925	3,450	397	11.5	514	14.9	421	12.2	1,049	30.4	943	27.3	54	1.6	71	2.1
1910–1914 (fiscal)	1,689	119	7.0	229	13.5	207	12.2	836	49.5	259	15.3	17	1.0	23	1.3
1913 (calendar)	1,793	143	8.0	246	13.7	198	11.1	865	48.2	299	16.7	17	.9	24	1.3
1921	2,509	338	13.5	417	16.6	296	11.8	765	30.5	618	24.6	35	1.4	40	1.6
1922	3,113	367	11.8	456	14.6	359	11.5	991	31.8	827	26.6	49	1.6	65	2.1
1923	3,792	418	11.0	583	15.4	467	12.3	1,157	30.5	1,020	26.9	59	1.6	87	2.3
1924	3,610	402	11.1	593	16.4	466	12.9	1,096	30.4	931	25.8	49	1.4	73	2.0
1925	4,227	459	10.9	522	12.3	519	12.3	1,238	29.3	1,319	31.2	78	1.8	92	2.2
1926	4,431	486	11.0	526	11.9	568	12.8	1,286	29.0	1,401	31.6	68	1.5	96	2.2
1927	4,185	485	11.6	501	12.0	518	12.4	1,276	30.5	1,257	30.0	55	1.3	93	2.2

[1] Period July 1, 1915, to Dec. 31, 1920.

A comparison of figures for 1927 with those for pre-war years shows very clearly the change in relative importance of the continents as markets for our exports and as sources of our imports. The steady development of the United States as a manufacturing nation and the advance in our standard of living have resulted in increased importation of raw materials and tropical and semitropical foodstuffs from Canada, Latin America, Asia, Africa, and Oceania. The expansion of our factory industries has also resulted in an especially large

Chart X.—PERCENTAGE DISTRIBUTION OF FOREIGN TRADE, BY CONTINENTS



increase in our exports to those continents which are less developed industrially than the United States.

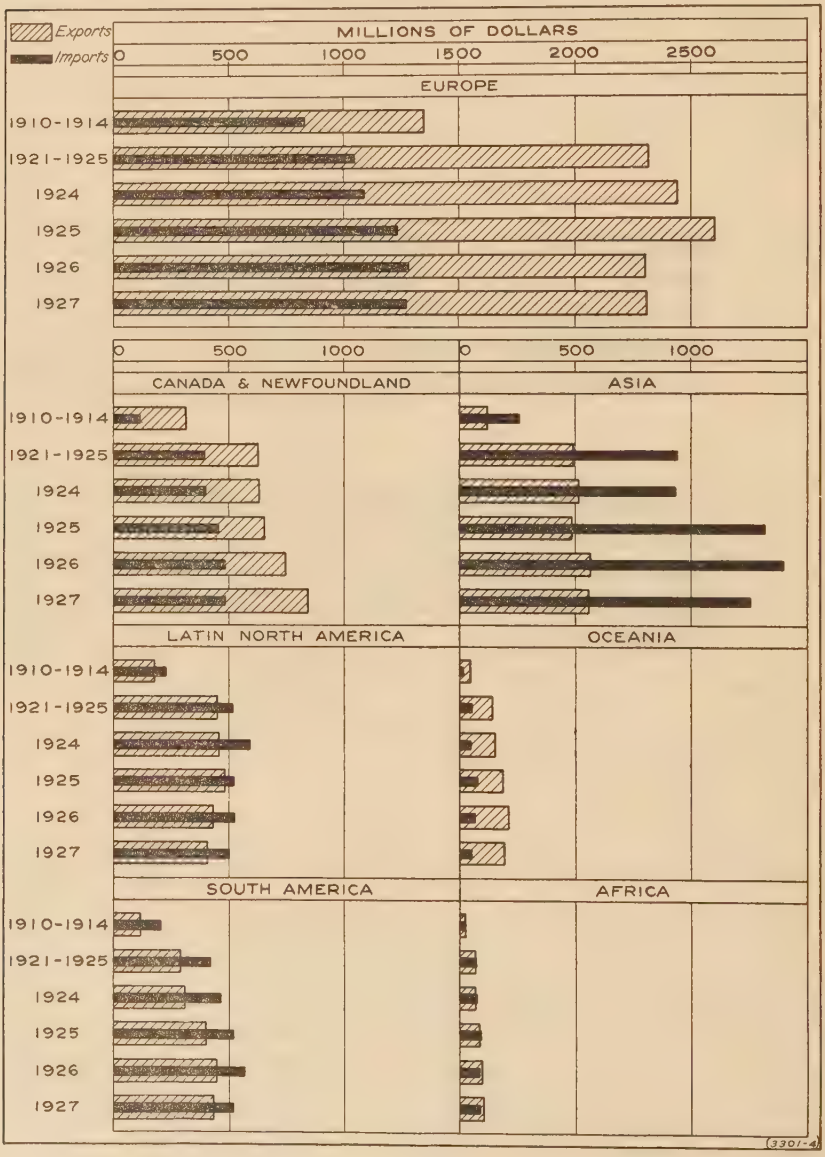
Growth of Trade by Continents.

There have been large increases in the value of both export and import trade with every continent since the pre-war period. Chart XI and Table 21 furnish a comparison of changes for all continents. Gains in exports have been in part the result of price advances, but the growth in trade with Asia, Africa, Oceania, and South America has been exceptionally large. Exports to North America and Europe show the largest absolute gain in value in comparison with pre-war years, but the relative change was not so great as in the case of the continents previously mentioned, because we have always had a highly developed trade with our immediate neighbors and with European countries.

A comparison of export figures for 1927 with the average for the period 1921–1925 indicates an increase of about one-half in the trade with South America and Africa, of more than one-third with northern North America and Oceania, and of one-eighth with Asia. It should

be borne in mind, also, that the export price level was lower in 1927 than in the period 1921–1925, so that the increases in volume were greater than the increases in value.

Chart XI.—MERCHANDISE EXPORTS AND IMPORTS, BY CONTINENTS



In 1927, as compared with 1926, the outstanding gains were in exports to northern North America and to Africa and there was a slight increase in exports to Europe. The decline of about 3 per cent in the trade with Latin America and the Far East was due entirely to the decline in export prices.

Table 21.—Per Cent Increase or Decrease in Foreign Trade, by Continents

Continent or region	Per cent change in 1927 exports from—			Per cent change in 1927 imports from—		
	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926
Total	+124.6	+10.7	+1.2	+147.8	+21.3	−5.6
North America	+149.9	+16.8	+6.5	+183.9	+8.2	−2.6
Northern	+164.0	+34.6	+13.0	+308.8	+22.2	−.2
Southern	+125.0	−8.3	−4.9	+119.1	−2.6	−4.8
South America	+261.9	+47.4	−1.3	+150.4	+22.9	−8.8
Europe	+71.4	−.2	+.2	+52.6	+21.6	−.7
Asia	+362.4	+12.2	−.9	+386.2	+33.3	−10.3
Oceania	+306.0	+37.0	−8.9	+215.6	+1.0	−20.2
Africa	+335.6	+53.9	+6.0	+313.1	+30.4	−3.3
Latin America	+179.8	+14.0	−3.0	+134.0	+8.9	−6.9
Far East	+348.9	+18.0	−3.3	+389.9	+31.7	−11.0

Changes in Import Trade from all Continents.

The value of imports from every continent was smaller in 1927 than in 1926, but the declines in the trade with northern North America, Europe, and Africa were relatively small. The decrease in the imports from Asia may be entirely ascribed to the falling off in the price of rubber from the abnormally high prices of 1925 and 1926. The trade with Oceania declined for the second consecutive year and the value of imports from Latin America was smaller than in 1926.

Comparison of figures for 1927 with the pre-war period shows an exceptionally large growth in the trade with Asia, Africa, and northern North America as a result of the enormous increase in our use of rubber and silk, wool and long staple cotton, and wood pulp and newsprint, which are supplied by those regions, respectively. Substantial gains also appeared in the trade with Latin America and Europe.

In comparison with the average period 1921–1925, imports in 1927 from all great trade regions except Latin North America and Oceania were from one-fifth to one-third greater. The fact that the price of sugar averaged less in 1927 than in 1921–1925 was largely responsible for the decline in trade with Latin North America.

Balance of Trade by Continents.

Europe leads among the four great trade regions (see Chart XI and Table 22), to which the United States exported more than it imported, the balance reaching $1,038,000,000 in 1927. Our trade with the United Kingdom showed an excess of exports over imports of $482,000,000 and with Germany an excess of $281,000,000, which together represented about three-fourths of the total trade balance with Europe. A so-called favorable balance is to be expected in our trade with Europe because that densely populated continent requires much of our foodstuffs and raw materials, while its exports, largely of manufactured goods, naturally go chiefly to countries less developed

industrially. There is also an excess of exports over imports in trade with Canada and Oceania and the balance in the case of Canada increased materially in 1927. The people of these countries, where economic conditions and the standard of living are very similar to those of the United States, purchase large numbers of automobiles and other mechanical conveniences in the production of which American industry excels. The excess of exports over imports in the trade with Africa amounted to $14,000,000 in 1927 and was more than twice as much as in 1926. The trade with Asia and Latin America continues to show an excess of imports.

The leading sources of the chief crude materials which we import—rubber, silk, wool, hides and skins, and furs—and of tropical and semitropical foodstuffs—sugar, coffee, cocoa, tea, and fruits—are the countries of the Far East and Latin America, and this naturally results in a very large volume of imports from those areas. The decrease in the excess of imports over exports from those regions in 1927 as compared with 1926 was very largely attributable to sharp reductions in the prices of many of the commodities imported.

Table 22.—Balance of Trade, by Continents and Great Trade Regions

Continent	Excess of exports (+) or imports (−) in millions of dollars						Per cent imports are of exports					
	1910–1914	1921–1925	1924	1925	1926	1927	1910–1914	1921–1925	1924	1925	1926	1927
Total	+477	+947	+981	+683	+378	+680	78.0	78.5	78.6	86.1	92.1	86.0
North America:												
Northern	+201	+231	+232	+200	+262	+360	37.0	63.2	63.4	69.7	64.9	57.4
Southern	−47	−70	−137	−42	−97	−93	126.2	115.7	130.0	108.8	122.7	122.8
South America	−86	−124	−152	−116	−124	−80	170.9	141.8	148.3	128.9	128.1	118.3
Europe	+514	+1,268	+1,349	+1,366	+1,024	+1,038	61.9	45.3	44.8	47.6	55.7	55.2
Asia	−137	−444	−416	−833	−836	−697	213.6	189.0	180.9	271.1	248.1	224.6
Oceania	+30	+87	+108	+112	+144	+139	36.2	38.2	31.3	41.1	32.1	28.1
Africa	+2	−2	−3	−3	+5	+14	91.6	102.5	103.8	103.5	95.2	86.9
Latin America	−133	−194	−289	−158	−222	−173	144.1	126.1	137.5	117.9	125.4	120.5
Far East	−96	−343	−292	−699	−672	−539	157.8	154.3	143.8	204.5	187.1	172.2

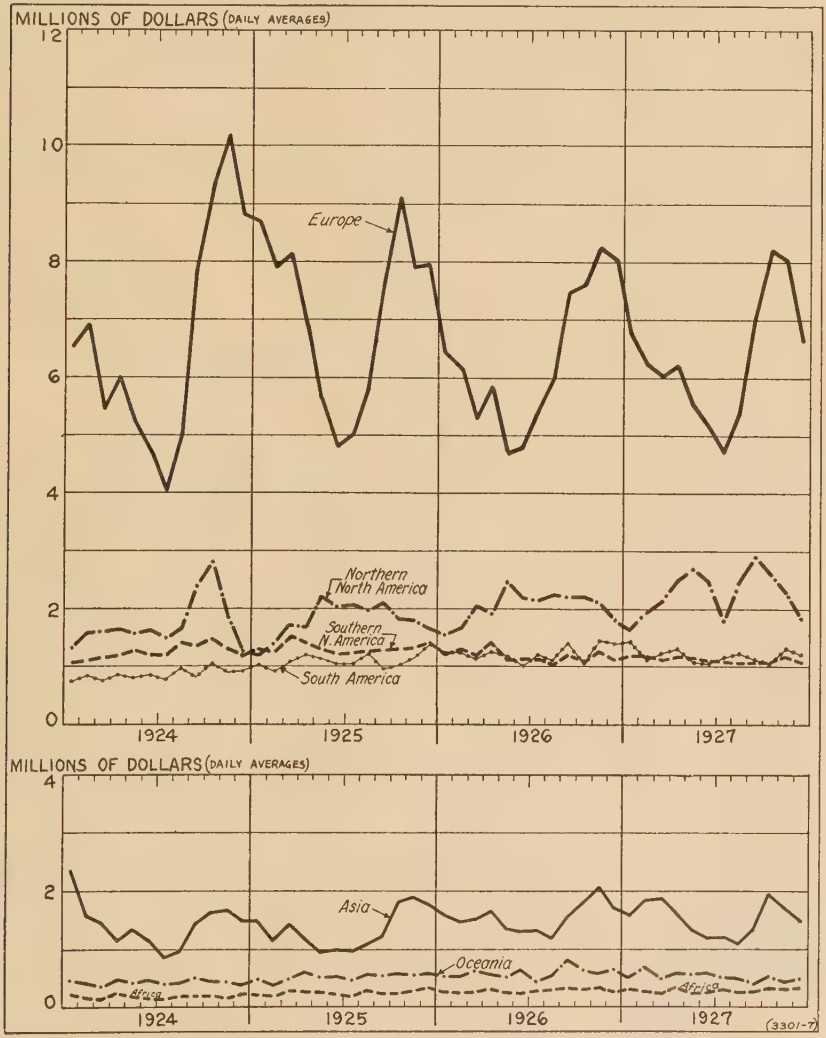
Quarterly Trade by Continents.

Changes in the geographic distribution of trade by quarters for each of the past three years are shown in Table 23, while the movement of exports by months on the daily average basis is indicated by Chart XII. The export trade with Europe is highly seasonal on account of the large shipments of agricultural products to that continent in the fall of each year. In 1927, however, this fall peak was less marked than in any of the immediately preceding years on account of the great decrease in both the quantity and value of cotton exports. Shipments of cotton to Japan are also the main cause of the seasonal movement in our exports to Asia, which usually show a pronounced expansion in the fourth quarter of the year. Our

exports to other continents consist largely of manufactured articles, and consequently show very little seasonal movement.

Seasonal factors are less important in our import trade than in the case of exports. Imports from Europe, Asia, and America show little if any seasonal fluctuation. Imports from Oceania and

Chart XII.—DAILY AVERAGE EXPORTS, BY CONTINENTS



Africa, on the other hand, are usually much larger in the first half of the year, when most of the purchases of wool and other agricultural products are made, than in the last two quarters. The quarterly imports from Asia were much influenced by changes in the price of rubber, which advanced to a peak in the first quarter of 1926 and has declined during most of the past two years.

Table 23.—Continent Distribution of Foreign Trade, by Quarters

[Values in millions of dollars]

Continent	1925				1926				1927			
	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.
Exports	1,271	1,093	1,140	1,407	1,124	1,083	1,201	1,401	1,201	1,165	1,142	1,356
North America	253	296	304	285	268	310	305	294	276	339	327	310
South America	91	103	99	110	108	103	113	119	115	105	108	110
Europe	744	527	566	766	536	465	576	732	573	515	523	703
Asia	123	95	100	168	138	131	125	171	160	128	113	158
Oceania	40	49	48	52	50	51	54	58	51	53	44	45
Africa	21	21	22	25	24	23	27	27	25	26	26	29
Imports	1,065	999	1,016	1,147	1,247	1,055	1,019	1,110	1,046	1,077	1,030	1,031
North America	252	268	225	237	258	254	237	263	243	262	238	243
South America	145	116	128	130	168	129	128	143	136	124	122	136
Europe	316	279	294	349	333	299	310	345	305	308	320	343
Asia	291	292	342	394	427	329	315	329	317	343	318	278
Oceania	27	22	13	16	20	21	14	12	16	16	12	10
Africa	34	22	15	21	40	23	16	18	29	23	19	21

Table 24.—Foreign Trade with Each Continent, by Economic Classes

NOTE.—Years 1905–1909 and 1910–1914 are fiscal years ending June 30; 1921–1925 and 1926, calendar years.

Continent and class	Millions of dollars									
	Domestic exports					Imports				
	1905–1909	1910–1914	1921–1925	1925	1926	1905–1909	1910–1914	1921–1925	1925	1926
Total	1,707	2,130	4,310	4,819	4,712	1,257	1,689	3,450	4,227	4,431
Crude materials	536	713	1,189	1,422	1,261	428	595	1,293	1,748	1,792
Foodstuffs	480	421	1,021	892	838	299	398	832	928	958
Semimanufactures	238	342	535	662	656	218	307	606	756	805
Finished manufactures	454	654	1,565	1,843	1,957	311	389	720	796	877
North America	298	483	1,029	1,079	1,113	244	347	911	981	1,012
Crude materials	57	86	166	123	184	77	114	220	246	224
Foodstuffs	60	86	241	227	220	109	157	412	374	385
Semimanufactures	36	70	123	142	156	40	46	149	177	190
Finished manufactures	145	241	500	587	554	18	30	131	184	212
South America	74	121	294	400	441	148	207	421	519	568
Crude materials	1	3	8	6	16	57	79	131	146	157
Foodstuffs	9	13	26	38	43	73	99	206	281	317
Semimanufactures	12	22	46	65	68	17	27	78	90	89
Finished manufactures	53	83	214	291	314	1	2	5	2	4
Europe	1,178	1,334	2,279	2,576	2,281	637	836	1,049	1,238	1,286
Crude materials	460	595	873	1,117	876	167	229	240	338	307
Foodstuffs	386	300	696	577	513	76	101	107	127	130
Semimanufactures	174	230	264	357	300	138	196	261	321	361
Finished manufactures	157	209	446	525	591	255	309	441	451	488
Asia and Oceania	139	168	638	674	776	213	276	997	1,397	1,469
Crude materials	17	27	135	170	176	113	151	655	962	1,049
Foodstuffs	18	18	51	43	54	40	41	95	130	109
Semimanufactures	14	17	96	90	124	23	37	105	148	140
Finished manufactures	90	106	356	371	421	36	47	142	157	171
Africa	18	25	70	89	101	15	23	71	92	96
Crude materials	1	2	6	6	9	15	22	46	55	56
Foodstuffs	6	4	8	7	8	(1)	(1)	11	16	16
Semimanufactures	2	3	6	7	8	(1)	(1)	13	20	24
Finished manufactures	10	16	49	69	76	(1)	(1)	1	1	1

[1] Less than $500,000.

Foreign Trade of Each Continent by Economic Classes.

Tables 24, 25, and 26 show the distribution of the trade with each of the continents according to the five great economic classes. The percentages bring out the importance of each class in the trade of each continent, and also the share of each continent in the total trade of a given class. As might be expected, finished manufactures dominate in our exports to South America, Asia, Oceania, and Africa, representing much more than one-half of the total trade with each of those continents. Nearly one-half of the total exports to North America also consist of finished manufactures, but in the trade with Europe only about one-fourth of the total is of that class. Foodstuffs are the most important class in our imports from the American continents, while crude materials dominate in those from Asia and Oceania and from Africa. Finished manufactures constitute a larger proportion than any other group in our imports from Europe; such manufactures are also important in our purchases from Asia and North America, but are relatively insignificant in imports from South America and Africa.

Of our total exports of crude materials during 1926 about 70 per cent went to Europe, a proportion considerably lower than before the war. Three-fifths of our exports of foodstuffs and 46 per cent of the semimanufactures went to Europe. European countries constituted the largest single group of markets for our exports of finished manufactures, though followed closely by North America. Of our imports of crude materials during 1926, more than one-half came from Asia and Oceania, and of imports of foodstuffs 40 per cent were from North America. Europe furnished during 1926 more than 45 per cent of our total imports of semimanufactures and 56 per cent of the imports of finished manufactures. The proportion of Europe in all classes of exports, and also in all classes of imports, has been lower in recent years than before the war. The share of the imports of crude materials furnished by the Far East was twice as high for 1926 as in the pre-war period.

Table 25.—Per Cent Each Continent Takes or Furnishes of Total Trade in Each Economic Class

Continent	Crude materials			Foodstuffs			Semimanufactures			Finished manufactures		
	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926
Exports, domestic	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
North America	12.1	14.0	14.6	20.4	23.5	26.2	20.6	22.9	23.7	36.8	32.0	28.3
South America	.4	.7	1.3	3.1	2.5	5.1	6.4	8.6	10.3	12.7	13.7	16.1
Europe	83.4	73.5	69.5	71.1	68.1	61.2	67.3	49.3	45.8	32.0	28.5	30.2
Asia and Oceania	3.8	11.4	13.9	4.3	5.0	6.4	5.0	18.0	19.0	16.2	22.7	21.5
Africa	.3	.5	.7	1.0	.8	1.0	.7	1.1	1.1	2.4	3.1	3.9
Imports	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
North America	19.2	17.0	12.5	39.4	49.5	40.2	15.1	24.5	23.6	7.7	18.1	24.2
South America	13.3	10.2	8.8	24.9	24.8	33.1	8.7	12.9	11.1	.6	.7	.5
Europe	38.6	18.6	17.1	25.4	12.9	13.6	64.0	43.1	44.9	79.5	61.2	55.6
Asia and Oceania	25.4	50.7	58.5	10.2	11.4	11.4	12.1	17.3	17.4	12.1	19.7	19.5
Africa	3.6	3.6	3.1	.1	1.3	1.7	.1	2.2	3.0	.1	.1	.1

Table 26.—Per Cent Each Class Makes of Total Trade for Each Continent

Class	North America			South America			Europe			Asia and Oceania		
	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926
Exports, domestic	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Crude materials	17.8	16.1	16.5	2.2	2.7	3.6	44.6	38.3	38.4	16.1	21.2	22.7
Foodstuffs	17.8	23.4	19.7	10.9	8.8	9.8	22.5	30.5	22.5	10.8	7.9	7.0
Semimanufactures	14.6	11.9	14.0	18.1	15.7	15.3	17.2	11.6	13.2	10.2	15.1	16.0
Finished manufactures	49.8	48.6	49.7	68.7	72.9	71.3	15.7	19.6	25.9	62.9	55.8	54.3
Imports	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Crude materials	32.9	24.2	22.1	38.1	31.2	27.7	27.4	22.9	23.8	54.7	65.7	71.4
Foodstuffs	45.1	45.2	38.1	47.8	49.0	55.8	12.1	10.2	10.1	14.7	9.5	7.4
Semimanufactures	13.4	16.3	18.8	13.0	18.5	15.7	23.5	24.9	28.1	13.5	10.5	9.5
Finished manufactures	8.7	14.3	21.0	1.1	1.3	.7	37.0	42.0	37.9	17.1	14.2	11.6

Trade by Commercial Regions.

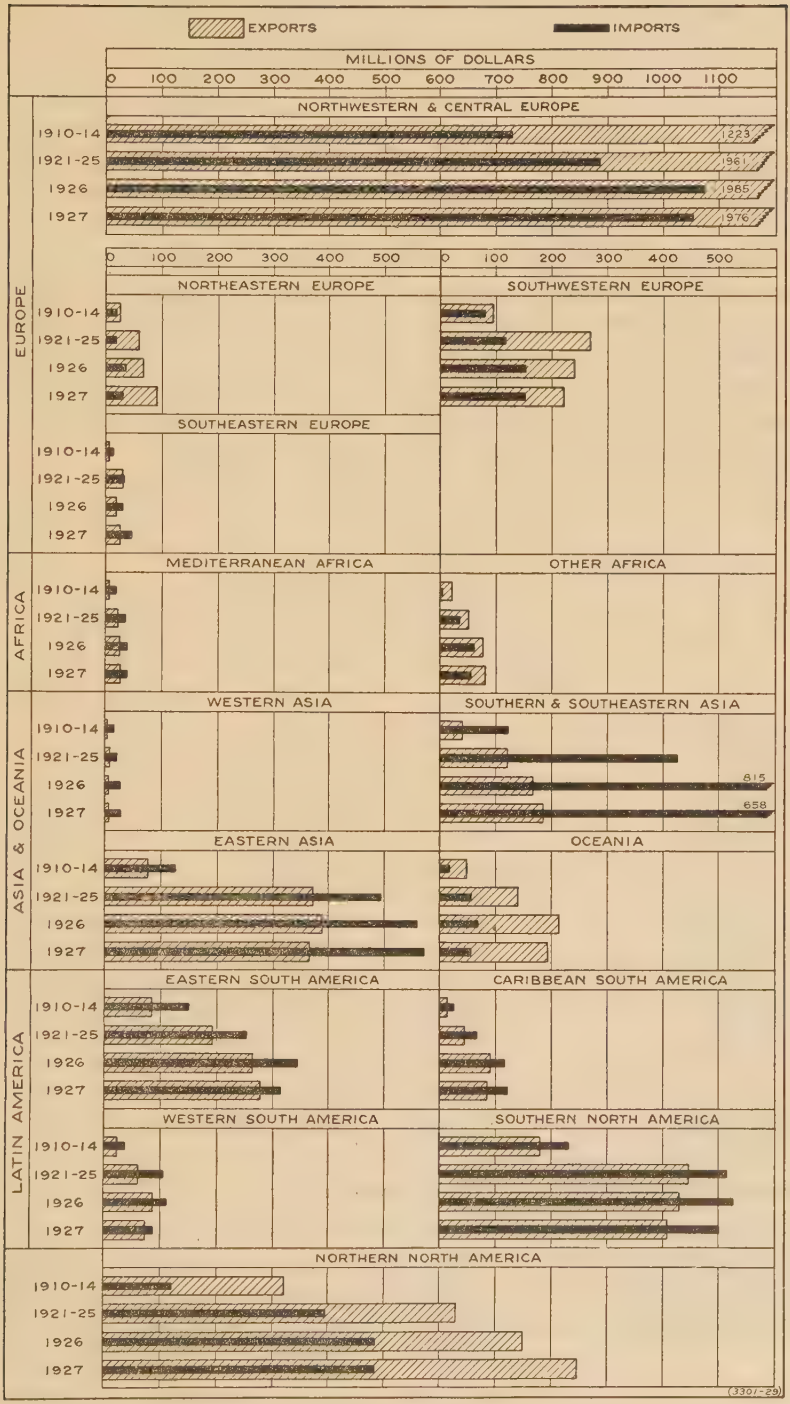
A more detailed picture of the geographic distribution of the United States foreign trade may be obtained by dividing each continent into commercial regions which are based largely on trade routes. In most cases these regions consist of countries which are more or less similar as regards geographic conditions, character of people and of industries, and type of goods imported or exported.

Table 27.—Foreign Trade of the United States by Commercial Regions

Region	Total exports in millions of dollars						Total imports in millions of dollars					
	1910–1914	1921–1925	1924	1925	1926	1927	1910–1914	1921–1925	1924	1925	1926	1927
North America:												
1. Northern	320	627	634	659	748	845	119	397	402	459	486	485
2. Southern	181	445	456	480	429	408	229	514	593	522	526	501
South America:												
3. North coast	13	44	48	70	92	86	23	66	76	85	115	119
4. East coast	85	193	201	258	263	278	148	251	262	319	343	312
5. West coast	23	60	65	74	88	73	36	104	128	115	110	87
Europe:												
6. Northwestern and central	1,223	1,961	2,096	2,194	1,985	1,976	724	885	924	1,036	1,070	1,051
7. Northeastern	26	58	58	90	67	92	19	18	24	27	35	31
8. Southwestern	96	268	268	296	240	220	80	115	110	140	151	150
9. Southeastern	5	31	23	24	18	26	14	32	37	35	30	45
Asia and Oceania:												
10. Western	3	8	6	7	6	7	14	21	22	29	26	27
11. Southern and southeastern	41	119	120	135	167	185	120	425	431	715	815	658
12. Eastern	78	372	389	344	392	367	125	497	477	575	559	572
13. Oceania	48	141	157	189	213	194	17	54	49	78	68	55
Africa:												
14. Mediterranean	5	21	16	18	24	25	18	36	33	45	39	39
15. Other Africa	20	49	55	71	77	82	4	35	40	47	57	54
Latin America (Groups 2, 3, 4, 5)	302	742	770	882	872	846	435	936	1,059	1,041	1,094	1,019
Far East (Groups 11, 12, 13)	166	632	666	669	771	746	262	976	957	1,368	1,443	1,285

Tables 27 and 28 show the trade by commercial regions in 1927, as compared with pre-war years and with recent years. The regions showing the largest increases in value of exports for 1927 as compared with 1926 were northern North America, east coast of South America, northeastern Europe, and southern and southeastern Asia,

Chart XIII.—FOREIGN TRADE BY COMMERCIAL REGIONS



and the increases were largely the result of the expansion in the trade with Canada, Argentina, Russia, British India, and Netherland East Indies, respectively. Exports to every commercial region, except northwestern and central Europe, were over twice as large in value in 1927 as in the average of the years 1910–1914. Exports to the north coast of South America were over six times as large as in the pre-war years, while exports to the commercial regions of the Far East and Africa were four or five times their pre-war value.

The only gains in imports during 1927 were shown by southeastern Europe, eastern Asia, the north coast of South America, and western Asia, while the most important declines were in imports from Oceania, southern and southeastern Asia, and west coast of South America. Wool was largely responsible for the decrease in imports from Oceania; the lower price of rubber for the decrease from southern and southeastern Asia; and the smaller value of imports of nitrate and copper for the decline from the west coast of South America.

Table 28.—Percentage Distribution of Trade and Per Cent Change by Commercial Regions

Region	Per cent of total exports			Per cent of total imports			Per cent change, 1927 exports from—			Per cent change, 1927 imports from—		
	1910–1914	1921–1925	1927	1910–1914	1921–1925	1927	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926
North America:												
1. Northern	14.8	14.3	17.4	7.0	11.5	11.6	+164.0	+34.6	+13.0	+308.8	+22.2	−0.2
2. Southern	8.4	10.1	8.4	13.5	14.9	12.0	+125.0	−8.3	−4.9	+119.1	−2.6	−4.8
South America:												
3. North coast	.6	1.0	1.8	1.3	1.9	2.8	+559.9	+96.3	−6.5	+427.1	+80.5	+3.2
4. East coast	3.9	4.4	5.7	8.8	7.3	7.5	+228.7	+43.9	+5.9	+110.3	+24.0	−9.0
5. West coast	1.1	1.4	1.5	2.1	3.0	2.1	+215.0	+22.7	−17.0	+142.5	−16.1	−20.8
Europe:												
6. Northwestern and central	56.5	44.6	40.6	42.9	25.7	25.1	+61.6	+.8	−.4	+45.2	+18.7	−1.8
7. Northeastern	1.2	1.3	1.9	1.1	.5	.7	+255.5	+57.9	+37.3	+60.6	+74.5	−11.5
8. Southwestern	4.5	6.1	4.5	4.7	3.3	3.6	+127.7	−19.1	−8.6	+88.1	+30.0	−.9
9. Southeastern	.2	.7	.5	.8	.9	1.1	+411.2	−16.3	+40.6	+223.9	+41.5	+51.1
Asia and Oceania:												
10. Western	.1	.2	.2	.8	.6	.6	+187.7	−7.1	+22.2	+98.0	+26.3	+2.4
11. Southern and Southeastern	1.9	2.7	3.8	7.1	12.3	15.7	+354.7	+55.0	+10.7	+449.4	+54.8	−19.3
12. Eastern	3.6	8.5	7.6	7.4	14.4	13.7	+372.2	−1.1	−6.2	+356.9	+15.2	+2.3
13. Oceania	2.2	3.2	4.0	1.0	1.6	1.3	+306.0	+37.0	−8.9	+215.6	+1.0	−20.2
Africa:												
14. Mediterranean	.2	5.	.5	1.1	1.1	.9	+415.4	+21.6	+6.1	+117.4	+8.6	−.1
15. Other Africa	.9	1.1	1.7	.3	1.0	1.3	+315.7	+67.7	+5.9	+1104.3	+52.9	−5.5
Latin America (Groups 2, 3, 4, 5)	14.0	16.9	17.4	25.8	27.1	24.4	+179.8	+14.0	−3.0	+134.0	+8.9	−6.9
Far East (Groups 11, 12, 13)	7.7	14.4	15.3	15.5	28.3	30.7	+348.9	+18.0	−3.3	+389.8	+31.7	−11.0

Changes in Export Trade with Leading Countries.

There were a number of interesting changes in our trade with individual foreign countries in 1927. Exports to Canada totaled $836,000,000, a value only slightly less than that of exports to the United Kingdom, which has always been our leading customer. The

increase of $97,000,000 over the previous year was chiefly the result of larger shipments of grains, automotive products, and machinery.

Although little change appeared in total exports to Europe, much fluctuation occurred in the trade with individual countries of that Continent. The United Kingdom, our largest export market, reduced its purchases from the United States $133,000,000, or 14 per cent, and exports to France and Italy declined 13 per cent and 16 per cent, respectively. Smaller shipments of cotton, meats, coal, and gasoline were important contributing factors in these declines. On the other hand, most of the other leading European countries took larger quantities of our exports, the increase in shipments consigned to Germany alone amounting to $117,000,000, or 32 per cent. This gain in exports to Germany was attributable in part to larger purchases of cotton, copper, and automotive products.

Exports to Africa in recent years have shown an exceptionally large growth, and the gain in value in 1927, as compared with 1926, was greater than the increase to Europe. Trade with British South Africa, which takes about half of the total exports to Africa, and with Egypt showed moderate gains over 1926, while the increase of exports to British West Africa was more marked.

Table 29.—Total Exports of the United States to Leading Countries

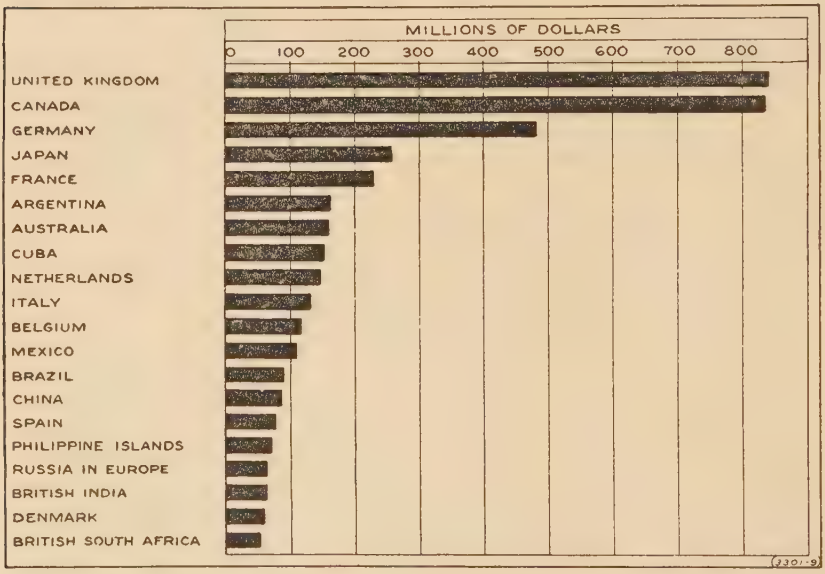
[Values in millions and tenths of millions of dollars]

Country	Value				Per cent of total			Per cent change in 1927 from—		
	1910–1914	1921–1925	1926	1927	1910–1914	1921–1925	1927	1910–1914	1921–1925	1926
United Kingdom	567.6	940.9	972.6	840.1	26.2	21.4	17.3	+48.1	−10.7	−13.6
Canada	315.0	619.0	738.6	835.9	14.5	14.1	17.2	+165.3	+35.0	+13.2
Germany	304.1	383.2	364.2	481.6	14.0	8.7	9.9	+58.4	+25.7	+32.2
Japan	45.3	242.0	260.8	257.6	2.1	5.5	5.3	+468.7	+6.5	−1.2
France	138.8	265.2	264.0	228.7	6.4	6.0	4.7	+64.8	−13.7	−13.4
Argentina	47.2	117.0	143.6	163.3	2.2	2.7	3.4	+246.3	+39.6	+13.8
Australia	38.7	111.3	168.7	159.1	1.8	2.5	3.3	+310.9	+43.0	−5.7
Cuba	63.0	181.3	160.5	155.4	2.9	4.1	3.2	+146.5	−14.3	−3.2
Netherlands	104.6	138.2	135.8	148.3	4.8	3.1	3.0	+41.8	+7.3	+9.2
Italy	66.0	185.2	157.4	131.6	3.0	4.2	2.7	+99.6	−28.9	−16.4
Belgium	53.1	111.3	99.3	116.2	2.5	2.5	2.4	+118.8	+4.4	+17.0
Mexico	53.1	146.3	135.0	109.2	2.5	3.3	2.2	+105.6	−25.4	−19.1
Brazil	31.5	59.9	95.4	88.7	1.5	1.4	1.8	+181.9	+48.1	−7.0
China	21.6	104.2	110.2	83.5	1.0	2.4	1.7	+287.0	−19.8	−24.2
Spain	26.2	70.5	68.2	73.8	1.2	1.6	1.5	+181.7	+4.7	+8.2
Philippine Islands	22.6	51.9	68.6	69.5	1.0	1.2	1.4	+207.7	+33.9	+1.3
Soviet Russia in Europe	23.5	31.7	48.5	64.1	1.1	.7	1.3	+173.2	+101.9	+32.1
British India	10.9	38.2	50.0	63.3	.5	.9	1.3	+480.5	+65.8	+26.6
Denmark	15.4	42.6	50.6	58.7	.7	1.0	1.2	+281.2	+37.7	+16.0
British South Africa	12.9	31.4	51.1	52.5	.6	.7	1.1	+306.6	+67.3	+2.8
Colombia	5.8	25.9	49.3	48.7	.3	.6	1.0	+745.2	+88.4	−1.1
Sweden	10.0	39.4	40.9	44.6	.5	.9	.9	+344.7	+13.1	+9.2
Chile	13.9	30.1	49.0	37.9	.6	.7	.8	+173.2	+25.7	−22.7
Venezuela	4.5	14.6	39.7	34.7	.2	.3	.7	+674.5	+138.4	−12.5
Panama	22.5	22.8	31.9	34.1	1.0	.5	.7	+51.7	+49.3	+6.7

Exports to South America declined slightly from the high value of the previous year, owing largely to marked declines in exports to Brazil, Venezuela, Chile, and Peru. Argentina, our largest South American market, took more automobiles, refined mineral oils, lumber, and other articles, so that the total exports to that country gained 14 per cent.

Exports to the Far East were less than in 1926 as a result of a contraction in the trade with China, Japan, Australia, and New Zealand. Smaller shipments of automobiles were made to Australia and New Zealand, and the value of gasoline sold there was reduced

Chart XIV.—MERCHANDISE EXPORTS TO LEADING COUNTRIES IN 1927



because of the lower price. China took less of our leaf tobacco, cigarettes, and kerosene, and shipments of kerosene to Japan were much reduced in value. More cotton was taken by Japan, China, and British India.

Exports to Mexico and Cuba declined for the second consecutive year, but sales in the West Indies other than Cuba showed a marked gain. The exports to the 25 leading countries which together represent nine-tenths of our trade are shown in Table 29, and similar information is graphically portrayed in Chart XIV. Of these 25 countries, 13 showed increases in 1927 as compared with 1926, while 12 showed decreases, these being in some cases wholly due to lower prices.

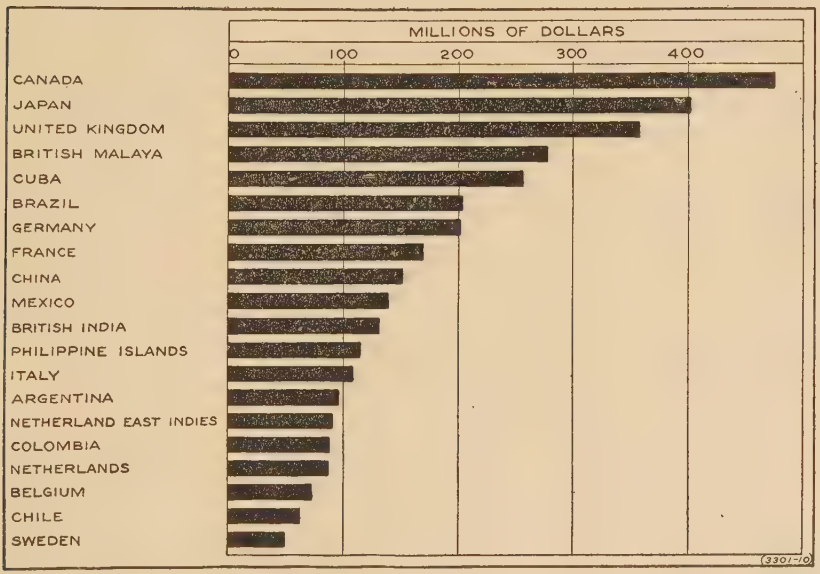
Changes in Import Trade by Leading Countries.

More than half of the total decrease in the value of imports in 1927 as compared with 1926 was confined to the imports from Asia

and was caused by the decline in trade with the British and Netherland East Indies. The lower price of rubber and smaller purchases of burlaps were the chief factors in the decline. Increases appeared in the trade with Japan, China, and the Philippine Islands and were due to larger imports of silk, wool, and sugar. Imports from Oceania showed a large percentage decrease in value as a result of smaller purchases of wool in Australia and New Zealand.

The value of imports from all of the larger countries of South America, except Argentina and Venezuela, decreased. These declines were most noteworthy for Brazil, Chile, and Uruguay and were

Chart XV.—MERCHANDISE IMPORTS FROM LEADING COUNTRIES IN 1927



caused by the lower price of coffee and reduced purchases of copper, nitrate, and wool. Larger importations of cattle hides and crude petroleum caused increases in the trade from Argentina and Venezuela, respectively. Reductions in the value of mineral oil from Mexico and of coffee from Central America were largely responsible for the decline in the trade with Latin North America. The value of trade with Cuba was greater as a result of the higher price of sugar, while larger shipments of crude petroleum increased the imports from the Netherland West Indies.

Some noteworthy changes in the value of imports from European countries were increases in the trade with France and Greece and declines for the United Kingdom and the Netherlands. Table 30 presents the 25 leading countries in our import trade ranked according to value of imports in 1927, and similar data are shown graphically in Chart XV.

Table 30.—Total Imports of the United States from Leading Countries

[Values in millions and tenths of millions of dollars]

Country	Value				Per cent of total			Per cent change in 1927 from—		
	1910–1914	1921–1925	1926	1927	1910–1914	1921–1925	1927	1910–1914	1921–1925	1926
Canada	117.2	393.8	475.9	475.1	6.9	11.4	11.4	+305.3	+20.6	−0.2
Japan	85.0	335.4	400.7	402.1	5.0	9.7	9.6	+373.1	+19.9	+.4
United Kingdom	278.9	356.0	383.2	357.9	16.5	10.3	8.6	+28.3	+.5	−6.6
British Malaya	24.6	153.2	383.8	277.8	1.5	4.4	6.6	+1,028.1	+81.3	−27.6
Cuba	122.1	299.6	250.6	256.6	7.2	8.7	6.1	+110.2	−14.4	+2.4
Brazil	110.9	152.2	235.3	203.0	6.6	4.4	4.9	+83.1	+33.4	−13.7
Germany	176.5	132.5	198.5	200.6	10.4	3.8	4.8	+13.7	+51.4	+1.0
France	130.1	147.9	152.0	167.8	7.7	4.3	4.0	+28.9	+13.5	+10.4
China	35.3	142.0	143.2	151.7	2.1	4.1	3.6	+329.4	+6.8	+5.9
Mexico	70.5	147.5	169.3	137.8	4.2	4.3	3.3	+95.5	−6.6	−18.6
British India	56.4	109.0	150.9	131.0	3.3	3.2	3.1	+132.5	+20.2	−13.2
Philippine Islands	19.4	80.1	103.8	116.0	1.2	2.3	2.8	+496.9	+44.8	+11.7
Italy	51.1	79.1	102.5	108.9	3.0	2.3	2.6	+112.9	+37.6	+6.2
Argentina	32.9	83.3	88.1	97.0	1.9	2.4	2.3	+194.9	+16.4	+10.1
Netherland East Indies	9.2	55.0	119.6	91.4	.5	1.6	2.2	+894.0	+66.3	−23.6
Colombia	11.9	49.4	90.2	87.8	.7	1.4	2.1	+635.0	+77.8	−2.7
Netherlands	34.9	70.6	101.9	87.2	2.1	2.0	2.1	+149.5	+23.4	−14.4
Belgium	40.4	58.3	77.8	72.2	2.4	1.7	1.7	+79.0	+23.8	−7.1
Chile	22.9	77.2	81.4	61.9	1.4	2.2	1.5	+170.3	−19.9	−24.0
Sweden	9.5	34.1	44.0	47.9	.6	1.0	1.1	+402.5	+40.6	+8.8
Switzerland	24.7	38.8	42.0	45.9	1.5	1.1	1.1	+85.8	+18.1	+9.1
Ceylon	10.0	27.1	55.8	40.8	.6	.8	1.0	+309.9	+51.0	−26.8
Australia	12.3	37.5	45.7	38.6	.7	1.1	.9	+213.7	+2.9	−15.5
Spain	21.6	29.6	41.4	34.4	1.3	.9	.8	+59.0	+15.9	−17.0
Egypt	16.9	33.5	35.2	33.3	1.0	1.0	.8	+97.1	−.5	−5.5

Table 31.—Trade of Continental United States with Foreign Countries and Outlying Possessions

NOTE.—Outlying possessions are Alaska, Hawaii, Porto Rico, Virgin Islands, Samoa, Guam, and the Philippines. Data are for years ended June 30, through 1918; thereafter for years ended Dec. 31.

[Values in thousands of dollars]

Year or yearly average	Exports			Imports		
	Total	To foreign countries	To United States possessions	Total	From foreign countries	From United States possessions
1906–1910	1,829,286	1,761,625	67,661	1,410,329	1,324,594	85,734
1911–1915	2,441,254	2,337,591	103,664	1,811,234	1,681,207	130,027
1915–1920 [1]	6,656,126	6,452,539	203,587	3,596,084	3,274,496	321,588
1921–1925	4,552,455	4,335,341	217,114	3,650,280	3,351,378	298,902
1903	1,447,258	1,410,420	36,838	1,067,420	1,008,531	58,889
1904	1,487,934	1,449,840	38,094	1,031,794	972,663	59,131
1905	1,551,657	1,508,137	43,520	1,173,079	1,097,829	75,250
1906	1,784,527	1,732,860	51,667	1,275,189	1,207,507	67,682
1907	1,932,794	1,865,544	67,250	1,488,894	1,414,055	74,839
1908	1,907,874	1,842,104	65,770	1,264,301	1,175,572	88,729
1909	1,717,172	1,646,784	70,388	1,384,318	1,294,882	89,436
1910	1,804,063	1,720,831	83,232	1,638,942	1,530,956	107,986
1911	2,115,186	2,022,874	92,312	1,607,343	1,499,918	107,425
1912	2,278,732	2,172,434	106,298	1,762,351	1,619,428	142,923
1913	2,539,837	2,429,962	109,875	1,909,427	1,780,538	128,889
1914	2,434,851	2,327,087	107,764	1,980,228	1,865,197	115,031
1915	2,837,666	2,735,597	102,069	1,796,822	1,640,953	155,869
1916	4,420,846	4,302,873	117,973	2,362,645	2,159,598	203,047
1917	6,412,069	6,250,649	161,420	2,856,008	2,603,871	252,137
1918	6,054,232	5,857,167	197,065	3,150,128	2,854,047	296,081
1918 (6 months)	3,222,793	3,138,793	84,000	1,614,762	1,430,878	183,884
1919	8,059,279	7,833,823	225,456	4,125,976	3,821,142	304,834
1920	8,439,474	8,105,660	333,814	5,668,942	5,140,192	528,750
1921	4,620,537	4,427,556	192,981	2,672,013	2,438,856	233,157
1922	3,963,077	3,780,020	183,057	3,282,296	3,035,381	246,915
1923	4,333,730	4,109,344	224,386	4,010,641	3,697,607	313,034
1924	4,761,644	4,521,219	240,425	3,832,148	3,494,159	337,989
1925	5,083,287	4,838,565	244,722	4,455,787	4,090,887	364,900
1926	4,991,783	4,729,811	261,972	4,669,318	4,303,302	366,016
1927	5,056,085	4,782,922	273,163	4,420,638	4,046,224	374,414

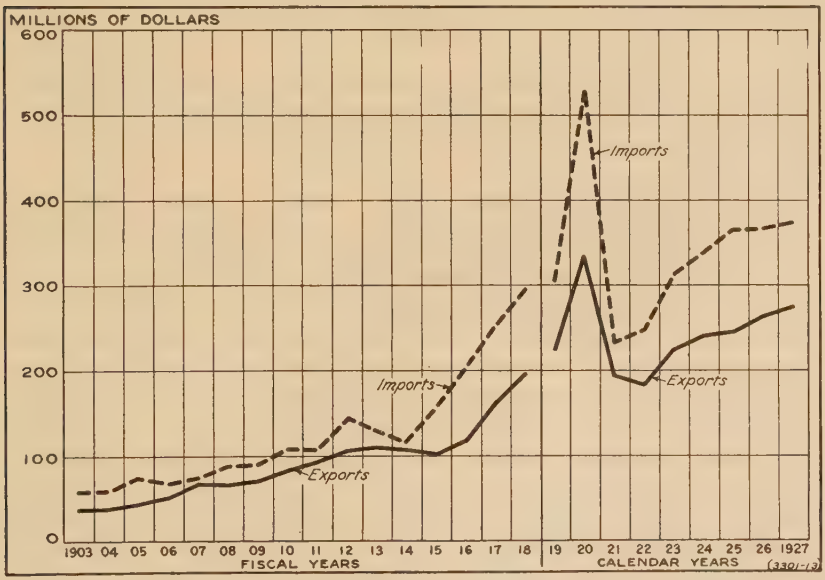
[1] Period July 1, 1915, to Dec. 31, 1920.

TRADE OF CONTINENTAL UNITED STATES

The foreign trade of practically all nations except the United States is obtained by totaling trade with foreign countries and trade with their own outlying possessions. In obtaining foreign trade totals for the United States, trade with the Philippine and Virgin Islands is considered foreign, while trade with all other outlying territories is considered domestic and is excluded.

Table 31 shows foreign trade statistics for the continental United States, classified on the basis used by other countries. Trade of the continental United States with all outlying territories and possessions (hereafter for brevity all are called territories)—Philippines, Alaska, Hawaii, Porto Rico, the Virgin Islands, Guam, and American Samoa—is added to its trade with foreign countries to secure the revised totals.

Chart XVI.—TRADE OF CONTINENTAL UNITED STATES WITH OUTLYING POSSESSIONS



On the other hand, the trade of these outlying areas with foreign countries is not included in the totals obtained, although Alaska, Hawaii, and Porto Rico are part of the United States customs area and their trade with foreign countries has been included in other totals of our foreign trade. The revision of our foreign trade statistics in this way for the year 1927 increases our exports about 3.9 per cent to a total of $5,056,964,000 and imports by 5.7 per cent to a total of $4,421,231,000.

It is worthy of note that exports to our noncontiguous territories increased by about $10,000,000, or 3.6 per cent, during 1927, whereas our exports to foreign countries increased by only 1.2 per cent. Imports from our outlying territories, moreover, showed a gain of 2.2 per cent, whereas our imports from foreign countries decreased

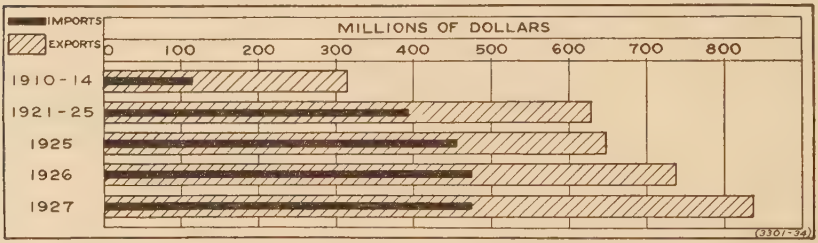
6 per cent. In the value of sugar imported from the noncontiguous territories there was an increase of $38,000,000 largely caused by an advance in price. This was partly offset, however, by a decline of $21,000,000 in the value of salmon imports from Alaska.

Exports from continental United States to outlying territories have increased in each year since 1922 and have shown a much greater growth relatively than exports to foreign countries. The import trade with our noncontiguous territories has also expanded steadily and in 1927 amounted to 8.5 per cent of the total trade of the continental United States. Imports of the United States from its territories and possessions have exceeded exports in every year for which data have been collected.

TRADE WITH CANADA AND OTHER NORTHERN NORTH AMERICA

Exports to northern North America increased in 1927 for the third consecutive year and amounted to 17.4 per cent of our total export trade, while imports from that region, which showed a slight decrease from the previous year, constituted 11.6 per cent of our total imports.

Chart XVII.—TRADE OF THE UNITED STATES WITH CANADA



Over 98 per cent of our trade with northern North America is confined to Canada, which is the most important source of our imports and the second largest market for our exports. (See Tables 29 and 30.) In fact, during 1927 Canada occupied first place among our export markets for several months, and for the year shipments to Canada totaled $835,900,000, which was an increase of $97,000,000 over 1926 and only $4,200,000 less than the exports to the United Kingdom, our most important foreign customer. This great expansion in export values resulted chiefly from larger shipments of grains (these are mostly reshipped from Canada to Europe), electrical equipment, agricultural implements, machinery, and automobiles and parts. Exports of cotton cloth to Canada were one-fourth greater in quantity in 1927 than in 1926, but because of a lower price level showed little change in total value. Sales of gasoline were one-fifth greater in quantity but the value declined in consequence of a reduced price. Table 32 shows all the leading commodities in the trade with Canada for the pre-war period and for the last three years.

Exports to Newfoundland and Labrador amounted to $8,500,000, while imports were valued at $9,100,000. Newsprint is our principal import from Newfoundland and amounts in value to about two-thirds of the trade.

Table 32.—Principal Commodities in Trade of the United States with Canada

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					315,044	648,768	738,568	835,878
Hides and skins, 1,000 lbs.	10,214	30,620	38,360	34,289	1,481	5,373	5,640	5,900
Furs, undressed					[2] 2,260	4,377	5,006	6,585
Barley, 1,000 bush.	62	5,477	2,004	10,600	38	4,079	1,366	8,600
Corn, do.	8,379	5,759	9,585	7,952	5,200	6,134	7,403	6,466
Oats, do.	361	13,633	3,655	6,307	132	6,479	1,592	3,273
Rye, do.	32	9,394	8,175	25,996	23	10,945	8,301	28,425
Wheat, grain, do.	1,776	18,853	26,327	47,949	1,742	29,613	37,566	67,180
Oranges, 1,000 boxes	1,135	1,830	2,273	2,649	2,841	9,027	9,519	11,065
Cottonseed oil, 1,000 lbs.	20,345	32,984	27,170	50,605	1,241	3,010	2,494	4,131
Leaf tobacco, do.	15,150	11,956	15,508	15,394	2,346	3,417	4,239	4,208
Cotton, unmanufactured, 1,000 bales	150	228	263	264	9,632	26,640	21,439	20,879
Cotton cloth, 1,000 sq. yds.[1]	17,404	36,206	44,089	55,070	1,615	6,014	6,660	6,870
Binder twine, 1,000 lbs.	25,334	39,207	18,471	6,381	2,096	5,434	2,675	807
Boards, planks, and scantlings, million bd. ft.	414	121	167	191	9,824	6,943	9,314	9,712
Anthracite coal, 1,000 tons	3,470	2,765	3,519	2,892	17,885	31,016	40,274	32,131
Bituminous coal, do.	10,002	11,983	12,173	13,031	23,961	51,595	52,203	55,621
Coke, do.	632	806	833	682	2,239	6,370	6,460	4,916
Crude petroleum, 1,000 bbls.	1,647	8,916	12,983	13,036	1,979	16,429	24,281	21,579
Gasoline, naphtha, etc, do.	793	2,520	2,629	3,145	3,511	12,353	13,257	12,002
Gas and fuel oil, do.	[2] 1,382	4,526	4,214	2,377	[2] 1,774	6,847	5,386	2,864
Iron and steel bars and rods, 1,000 lbs.	308,675	181,887	222,165	176,236	4,622	5,137	5,877	4,811
Iron and steel plates, do.		187,830	265,200	258,939		4,706	6,443	5,770
Skelp iron or steel, do.		186,243	210,253	205,086		3,630	4,182	3,951
Iron or steel sheets, galvanized, do.	[2] 83,011	55,838	72,770	69,602	[2] 2,429	2,596	3,143	2,793
Steel sheets, black, do.		97,691	146,073	139,441		3,630	5,144	4,697
Tin plate, terneplate, etc, do.	68,844	73,371	105,176	93,898	2,400	3,926	5,902	5,249
Structural shapes, 1,000 tons	143	78	121	122	5,541	3,754	5,830	5,329
Copper (ingots, bars, rods), 1,000 lbs.	[2] 33,171	31,732	26,806	32,085	[2] 5,743	4,613	4,017	4,567
Brass and bronze and manufactures of					3,143	3,234	3,612	3,775
Electrical machinery and apparatus					[2] 8,842	14,363	15,976	18,267
Industrial machinery					[2] 27,081	28,411	36,003	41,445
Agricultural machinery and implements					[2] 12,197	14,163	21,845	29,791
Automobiles, passenger, number	[2] 6,723	13,928	25,396	34,300	[2] 8,229	12,667	20,233	26,424
Automobile engines, do.	[2] 8,906	61,224	72,145	95,510	754	7,399	8,786	10,553
Automobile parts, except engines					2,382	26,324	29,170	34,502
Imports					117,213	454,235	475,881	475,077
Cattle, thousand	56	149	165	288	2,020	4,474	4,859	12,995
Dairy products					1,284	11,354	12,453	9,018
Fresh-water fish and eels, 1,000 lbs.		40,810	48,745	38,188		3,805	4,794	5,700
Cattle hides, 1,000 pieces		847	810	926	4,691	4,891	4,335	6,469
Furs, undressed					2,044	11,914	11,927	14,515
Wheat, 1,000 bush.	1,197	13,901	14,141	11,753	1,001	19,341	19,687	15,332
Bran, shorts, and other by-product feeds of wheat						6,073	4,201	1,225
Flaxseed, 1,000 bush.	4,110	5,917	3,043	2,411	6,435	14,382	6,341	4,847
Pulpwood, 1,000 cords	976	1,472	1,379	1,572	6,399	14,992	14,104	16,153
Boards, planks, deals, etc, 1,000 bd. ft.	937	1,795	1,837	1,662	16,912	54,296	52,773	45,884
Laths, million	661	1,949	1,825	1,690	1,720	10,492	9,710	7,176
Shingles, do.	675	2,513	2,489	1,963	1,588	9,992	8,895	6,683
Wood pulp, mechanically ground, 1,000 tons	170	264	249	206	3,049	7,820	7,474	5,536
Chemical wood pulp:								
Sulphite, do.	49	391	379	351	1,994	25,222	25,793	23,398
Sulphate, do.		128	140	139		8,166	9,369	9,030
Standard newsprint, million lbs.	229	2,591	3,314	3,552	4,393	94,254	111,924	118,731
Asbestos, unmanufactured, 1,000 lbs.	64	202	225	193	1,427	6,355	7,318	6,680
Copper (ore, concentrates, unrefined pigs, etc.), 1,000 lbs.	[2] 65,606	94,618	100,641	102,515	[2] 8,366	12,513	13,300	11,943
Nickel (ore, pigs, ingots), do.	35,271	37,909	34,392	30,563	4,641	6,349	6,072	5,829
Calcium cyanamid, 1,000 tons		82	79	106		4,105	3,795	4,212

[1] Stated in linear yards for 1910–1914.

[2] Year ended June 30, 1913.

Imports from Canada aggregated $475,100,000 in 1927, which was a slight decrease from the preceding year. Standard newsprint, which in recent years has been our principal import from Canada, gained 6 per cent in value, while flaxseed, lumber, wood pulp, and copper declined in value.

TRADE WITH LATIN AMERICA

Latin America maintained in 1927 second place among the great trade regions as a market for our exports and third place as a supplier of our imports. Exports to Latin America (exclusive of Porto Rico) totaled $845,700,000, a decline of 3 per cent from 1926, as a result of smaller shipments to Mexico, Cuba, Venezuela, Brazil, and Chile. Imports, which were valued at $1,018,900,000, fell off about 7 per cent in value in consequence of the reduced volume of trade with Mexico and Chile and the lower prices paid for Brazilian coffee. In addition to this trade, shipments from the mainland of the United States to Porto Rico totaled $86,300,000 and imports from that island to the United States were valued at $96,900,000, which are the largest amounts, except for 1920, which have been reported in many years.

Table 33.—Trade With Latin America, by Commercial Regions and Countries

[Values in millions and tenths of millions of dollars]

Region and country	Exports					Imports				
	1910–1914	1921–1925	1925	1926	1927	1910–1914	1921–1925	1925	1926	1927
Latin America, total[1]	302.2	741.7	882.3	872.3	845.7	435.5	935.6	1,040.5	1,094.0	1,018.9
Southern North America	181.2	444.6	479.7	428.8	407.8	228.6	514.2	521.7	526.1	500.9
Mexico	53.1	146.3	144.7	135.0	109.2	70.5	147.5	178.8	169.3	137.8
Central America	37.6	58.7	72.8	75.1	76.4	17.4	36.4	42.6	48.9	40.4
British Honduras	1.5	1.9	2.2	2.4	2.1	1.4	2.4	2.8	2.8	3.7
Costa Rica	3.4	5.1	6.8	6.3	7.3	3.8	5.1	4.8	7.1	6.0
Guatemala	2.8	7.2	9.4	11.1	10.6	2.8	10.0	11.3	14.5	10.2
Honduras	2.8	10.3	9.6	7.5	8.5	2.8	6.0	8.7	8.7	9.3
Nicaragua	2.4	5.3	7.4	6.3	6.9	1.4	5.0	6.2	6.0	4.2
Panama	22.5	22.8	28.2	31.9	34.1	3.8	4.6	6.4	5.5	5.4
Salvador	2.1	6.1	9.2	9.6	6.9	1.3	3.3	2.3	4.2	1.5
West Indies and Bermudas	90.5	239.5	262.2	218.8	222.2	140.8	330.4	300.3	307.9	322.7
Bermuda	1.4	3.6	3.2	3.3	3.8	.6	1.1	.9	1.1	1.1
Jamaica	[2] 5.0	8.5	8.9	8.4	8.6	[2] 6.1	6.9	8.2	9.1	9.7
Trinidad and Tobago	[2] 3.3	5.2	4.2	4.9	5.9	[2] 5.5	5.2	6.0	8.2	7.6
Other British	[2] 4.4	7.0	7.0	6.0	5.7	[2] 1.7	2.7	3.5	3.4	3.8
Cuba	63.0	181.3	198.7	160.5	155.4	122.1	299.6	261.7	250.6	256.6
Dominican Republic	4.4	15.3	17.8	14.6	18.9	3.6	8.2	7.3	8.1	11.1
Netherland West Indies	.9	3.1	4.2	4.9	6.5	.5	4.3	9.3	24.4	29.9
French West Indies	1.6	2.6	2.7	2.0	2.7	.1	.2	.4	.2	.1
Haiti, Republic of	5.9	10.9	13.7	10.9	11.1	.8	1.7	2.1	1.4	1.2
Virgin Islands of United States	.9	1.9	1.9	1.8	2.1	.2	.7	1.0	.8	1.0
South America	121.0	297.1	402.6	443.5	437.9	206.9	421.3	518.8	568.0	518.0
North coast	13.1	44.0	70.0	92.3	86.3	22.5	65.8	84.8	115.2	118.8
Colombia	5.8	25.9	41.4	49.3	48.7	11.9	49.4	63.4	90.2	87.8
Guiana—										
British	1.8	2.1	2.0	1.6	1.5	.5	.7	1.0	1.2	1.0
Surinam (Netherland)	.7	1.0	1.2	1.6	1.2	.9	.7	.7	.4	1.4
French	.3	.5	.3	.2	.1	[3]	.2	.1	.1	[3]
Venezuela	4.5	14.6	25.2	39.7	34.7	9.1	14.9	19.6	23.3	28.6
East coast	84.7	193.5	258.4	263.0	278.5	148.3	251.4	318.9	342.5	311.8
Argentina	47.2	117.0	148.8	143.6	163.3	32.9	83.3	80.2	88.1	97.0
Brazil	31.5	59.9	87.5	95.4	88.7	110.9	152.2	221.6	235.3	203.0
Paraguay	.1	.6	.9	.9	1.3	[3]	.7	.4	.5	.9
Uruguay	5.9	16.0	21.3	23.0	25.0	4.5	14.8	16.1	18.5	10.9
West coast	23.2	59.7	74.2	88.2	73.2	36.0	104.1	115.2	110.3	87.4
Bolivia	.9	3.6	5.1	5.2	4.9	[3]	1.1	.1	.3	.2
Chile	13.9	30.1	39.3	49.0	37.9	22.9	77.1	89.2	81.4	61.9
Ecuador	2.4	4.9	6.8	4.7	5.5	3.4	6.9	8.7	6.8	5.2
Peru	6.0	20.9	23.0	29.4	24.9	9.8	19.0	17.2	21.8	20.1
Porto Rico	33.2	70.2	77.5	84.7	86.3	36.9	76.5	92.7	90.2	[illegible]

[1] Does not include shipments to or from Porto Rico; these are shown separately at bottom of table.
[2] 4-year average, 1911–1914.
[3] Less than $50,000.

Imports from Latin America exceeded exports to that area in 1927 by $173,000,000, which was a smaller balance than in most other recent years. Each of the trade regions except the east coast of South America shared in the decline in exports, and imports from all the regions except the north coast of South America were smaller in 1927 than in 1926.

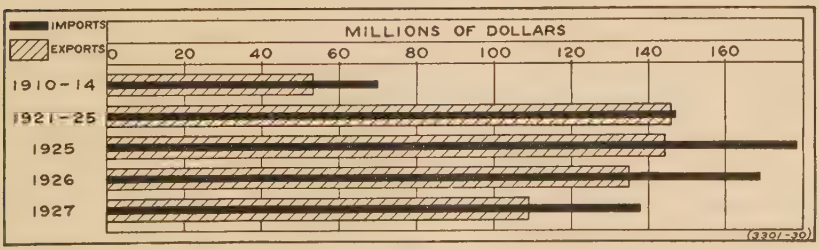
Table 34.—Percentages of Distribution and Change in the Foreign Trade with Latin-American Countries

Region and country	Per cent of total exports			Per cent of total imports			Per cent change in 1927 exports from—			Per cent change in 1927 imports from—		
	1910–1914	1921–1925	1927	1910–1914	1921–1925	1927	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926
Latin America, total	**14.0**	**16.9**	**17.4**	**25.8**	**27.1**	**24.4**	**+179.8**	**+14.0**	**−3.0**	**+134.0**	**+8.9**	**−6.9**
Southern North America	**8.4**	**10.1**	**8.4**	**13.5**	**14.9**	**12.0**	**+125.0**	**−8.3**	**−4.9**	**+119.1**	**−2.6**	**−4.8**
Mexico	2.5	3.3	2.2	4.2	4.3	3.3	+105.6	−25.4	−19.1	+95.5	−6.6	−18.6
Central America	1.7	1.3	1.6	1.0	1.1	1.0	+103.2	+30.0	+1.7	+132.8	+11.2	−17.3
Cuba	2.9	4.1	3.2	7.2	8.7	6.1	+146.5	−14.3	−3.2	+110.2	−14.4	+2.4
North Coast South America	**.6**	**1.0**	**1.8**	**1.3**	**1.9**	**2.8**	**+559.9**	**+96.3**	**−6.5**	**+427.1**	**+80.5**	**+3.2**
Colombia	.3	.6	1.0	.7	1.4	2.1	+745.2	+88.4	−1.1	+635.0	+77.8	−2.7
Venezuela	.2	.3	.7	.5	.4	.7	+674.5	+138.4	−12.5	+213.5	+92.3	+22.7
East Coast South America	**3.9**	**4.4**	**5.7**	**8.8**	**7.3**	**7.5**	**+228.7**	**+43.9**	**+5.9**	**+110.3**	**+24.0**	**−9.0**
Argentina	2.2	2.7	3.4	1.9	2.4	2.3	+246.3	+39.6	+13.8	+194.9	+16.4	+10.1
Brazil	1.5	1.4	1.8	6.6	4.4	4.9	+181.9	+48.1	−7.0	+83.1	+33.4	−13.7
Uruguay	.3	.4	.5	.3	.4	.3	+321.3	+56.6	+8.5	+142.9	−26.4	−41.1
West Coast South America	**1.1**	**1.4**	**1.5**	**2.1**	**3.0**	**2.1**	**+215.0**	**+22.7**	**−17.0**	**+142.5**	**−16.1**	**−20.8**
Chile	.6	.7	.8	1.4	2.2	1.5	+173.2	+25.7	−22.7	+170.3	−19.9	−24.0
Ecuador	.1	.1	.1	.2	.2	.1	+128.2	+12.2	+18.6	+54.1	−24.3	−23.1
Peru	.3	.5	.5	.6	.6	.5	+312.2	+18.7	−15.3	+105.4	+5.7	−7.8

MEXICO

Exports to Mexico were valued at $109,200,000 in 1927, which was a decline of 19 per cent as compared with 1926, and the lowest value reported for any year since 1918. The commodities sold in Mexico

Chart XVIII.—TRADE OF THE UNITED STATES WITH MEXICO



are highly varied, so that somewhat less than half of the value of export trade is shown by leading items in the accompanying table. Lard, boots and shoes, grains and flour, cotton cloth, lumber, tubular products, machinery, automobiles, and motor trucks and busses were some of the more important commodities for which sales were smaller in 1927 than in other recent years.

Imports aggregated $137,800,000, which was 18.6 per cent less than in 1926, and lower than in any year since 1922. The crude petroleum imports, which were one-third smaller in quantity and were also lower in average price, accounted for about one-half of the total decline in the import trade. There were also marked declines in the imports of topped oils and gasoline. Both the quantity and value of our imports of cane sugar from Mexico decreased more than one-half in 1927 and cotton imports also fell off sharply. Imports of sisal or henequen, on the other hand, increased about one-tenth in quantity, although lower in value than in 1926, and lead imports increased 26 per cent.

Table 35.—Principal Commodities in Trade of the United States with Mexico

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**53,091**	**144,720**	**134,994**	**109,152**
Cattle, thousands	7	73	17	15	292	1,537	715	623
Eggs in shell, 1,000 doz	673	4,267	3,847	4,189	160	1,198	1,025	937
Lard, 1,000 lbs	7,001	46,529	45,379	43,817	795	8,451	7,522	6,343
Boots and shoes, 1,000 pairs	752	599	425	256	1,570	1,848	1,317	824
Corn, grain, 1,000 bush	2,501	2,413	4,212	1,058	1,811	2,903	3,982	1,013
Wheat, grain, do	1,179	1,253	1,781	1,114	1,204	2,213	2,887	1,664
Wheat, flour, 1,000 bbls	31	201	206	88	159	1,555	1,514	623
Automobile tires (casings), number		88,347	80,122	94,687		1,058	1,079	1,055
Cotton cloth, 1,000 sq. yds.[1]	2,462	20,819	14,190	10,888	294	4,341	2,705	1,928
Boards, etc., southern pine, 1,000 bd. ft	[2] 74,850	59,976	53,272	46,238	[2] 1,445	2,324	2,285	1,888
Box shooks, do	[2] 4,566	33,578	36,486	28,259	[2] 522	1,254	1,346	982
Gasoline, naphtha, etc., 1,000 bbls	6	207	225	364	33	1,183	1,209	1,969
Gas and fuel oil, do	[3] 34	814	924	1,043	[3] 40	1,210	974	1,160
Paraffin wax, 1,000 lbs	14,746	17,919	12,583	18,439	538	1,072	749	793
Tubular products and fittings, do	70,069	83,936	60,835	46,357	1,927	4,199	3,156	2,418
Industrial machinery					5,628	12,813	11,785	10,499
Agricultural machinery					[2] 674	2,139	2,566	1,652
Motor trucks and busses, number	[2] 35	3,586	2,203	1,743	[2] 83	2,041	2,033	1,460
Automobiles, passenger, do	[2] 235	12,560	9,809	6,028	[2] 423	8,050	6,252	4,129
Railway cars and parts					906	2,537	687	1,819
Explosives, 1,000 lbs		9,826	9,065	5,562	669	1,304	1,341	781
Soap, do		15,650	12,193	7,360	115	1,289	1,033	632
Medicinal preparations					4,215	1,480	1,487	1,322
Imports					**70,479**	**178,835**	**169,306**	**137,815**
Goat and kid skins, 1,000 pieces		2,943	3,161	3,261	1,965	1,905	1,806	2,053
Tomatoes, 1,000 lbs		61,176	67,048	105,027		1,875	2,042	3,207
Bananas, 1,000 bunches	1,176	3,241	4,592	5,721	302	1,656	2,658	3,380
Coffee, 1,000 lbs	31,220	27,532	26,934	22,559	4,522	7,049	7,206	6,162
Vanilla beans, do	341	231	222	238	1,050	1,553	713	603
Sugar, cane, do	1,420	28,254	58,130	25,035	52	2,002	2,637	1,285
Chicle, do	2,532	9,375	9,223	9,392	791	4,663	4,687	4,850
Cotton, unmanufactured, do	7,762	10,811	35,126	21,653	824	2,661	5,934	2,941
Istle, 1,000 tons	9	17	13	13	769	1,933	1,926	1,876
Sisal and henequen, do	128	109	83	91	14,314	17,710	14,264	13,072
Crude petroleum, 1,000 bbls	6,469	55,049	40,398	26,019	4,013	64,646	46,778	30,442
Topped oil, including fuel oils[4], 1,000 bbls		11,627	12,706	6,234		13,156	14,002	6,878
Gasoline and naphtha, do	4	3,246	2,714	1,823	[3] 2	12,861	10,600	6,989
Copper ore, concentrates, matte, 1,000 lbs	19,714	27,072	22,655	33,148	2,284	3,254	2,719	3,842
Unrefined copper (pigs, bars), do	[2] 112,256	71,778	82,321	82,975	[2] 17,317	9,604	11,739	10,347
Lead (ore and bullion), do	148,193	206,951	235,804	297,106	3,088	14,338	14,922	15,368

[1] Stated in linear yards for years 1910–1914.
[2] Year ended June 30, 1913.
[3] Year ended June 30, 1914.
[4] Less than 500 barrels in 1914.

CENTRAL AMERICA

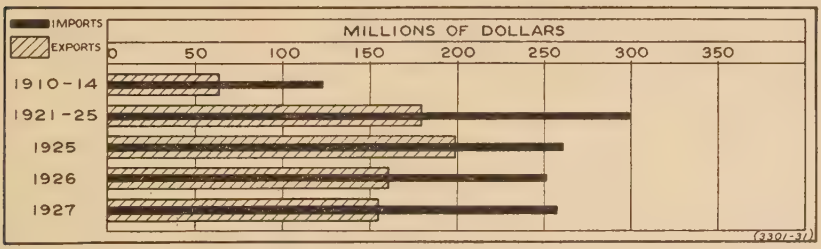
Exports from the United States to Central America have expanded 70 per cent since 1922 and in 1927 amounted to $76,400,000. More than two-fifths of this amount consisted of shipments to Panama, which include those to the Canal Zone. The increase in 1927 export trade as compared with 1926 was confined to Panama, Honduras, Costa Rica, and Nicaragua. Shipments to Salvador declined considerably.

Imports totaled $40,400,000, which was a decrease of 17 per cent as compared with 1926 and the first break in a continuous growth since 1922. In 1927 three-fourths of this import trade consisted of bananas and coffee; banana imports reached an aggregate value of $20,600,000, 9 per cent more than in 1926, while coffee imports totaled $9,900,000, a decrease of approximately one-half.

CUBA

A further decline of 3 per cent occurred in our exports to Cuba in 1927 as a result of the business depression in that country which continued throughout the year. Exports amounted to $155,400,000 as compared with $160,500,000 in 1926. Smaller quantities of many

Chart XIX.—TRADE OF THE UNITED STATES WITH CUBA



commodities were shipped to Cuba in 1927, but the decline in value for some of the larger items, notably lard and wheat flour, was the result of lower prices. Sales of cotton goods expanded and were larger than in either 1925 or 1926. The values of exports of motor trucks and busses, passenger automobiles, and sugar-mill machinery exceeded those of 1926.

Imports from Cuba expanded 2.4 per cent and totaled $256,600,000, owing to the increase in the value of sugar, notwithstanding a reduction in the quantity imported. There was a gain in the quantity of cigar leaf imported, whereas the value was much lower, and imports of copper showed considerable gain in both quantity and value.

Table 36.—Principal Commodities in Trade of the United States with Cuba

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**63,047**	**198,655**	**160,488**	**155,383**
Hams and shoulders, 1,000 lbs.	4,696	14,526	7,281	7,425	717	2,957	1,763	1,484
Bacon, do.	7,697	22,673	20,601	21,183	910	4,108	3,256	3,037
Eggs in shell, 1,000 doz.	4,817	11,779	11,758	11,472	1,037	3,174	3,104	2,666
Milk and cream, condensed and evaporated, 1,000 lbs.	6,234	19,550	18,360	13,411	526	2,474	2,246	1,683
Lard, do.	41,379	76,973	79,654	80,120	4,601	13,223	12,037	10,841
Leather boots and shoes, 1,000 pairs	3,049	3,342	2,713	2,457	3,343	7,085	5,112	4,515
Corn, 1,000 bush.	2,301	2,233	1,954	1,631	1,640	2,728	1,714	1,463
Wheat flour, 1,000 bbls.	856	1,198	1,146	1,239	4,246	9,815	8,734	8,692
Beans, dried, 1,000 bush.		346	391	392		1,485	1,390	1,235
Potatoes, white, do.	974	1,088	986	1,379	746	1,755	1,800	2,089
Coffee, green, 1,000 lbs.	21,182	10,623	9,295	3,146	3,184	3,024	2,525	906
Cotton cloth, 1,000 sq. yds.[1]	21,874	65,559	69,051	79,013	1,467	9,668	9,404	9,826
Cotton hosiery, 1,000 doz. ps.		687	824	841		1,246	1,453	1,242
Cotton shirts, thousand		1,322	1,079	706		1,313	1,094	585
Boards, etc., southern pine, 1,000 bd. ft.	[2]135,628	123,425	91,436	104,610	[2] 2,476	4,107	3,060	3,167
Coal, bituminous, 1,000 tons	1,051	620	550	568	2,835	2,828	2,494	2,740
Crude petroleum, 1,000 bbls.	128	928	434	527	354	2,745	1,177	1,303
Gasoline, naphtha, etc., do.	7	257	822	489	56	1,262	3,867	1,742
Gas and fuel oil, do.	[2] 37	1,398	252	1,942	[2] 43	2,075	413	2,331
Lubricating oil, do.	35	124	81	94	456	1,705	1,245	1,148
Iron and steel sheets, galvanized, 1,000 lbs.	[2] 12,406	26,148	26,897	24,527	[2] 362	1,209	1,245	1,134
Structural shapes, 1,000 tons	13	17	12	11	620	1,009	611	638
Rails, do.	34	40	20	19	992	1,651	795	661
Tubular products and fittings, 1,000 lbs.	44,860	54,344	42,950	43,325	970	2,724	1,998	1,960
Sugar-mill machinery					[2] 1,383	5,448	1,584	2,917
Locomotives, number	[2] 44	52	12	6	[2] 382	1,101	216	93
Motor trucks and busses, do.	[2] 14	2,087	1,909	1,842	[2] 24	1,271	1,394	1,948
Automobiles, passenger, do.	[2] 223	8,035	4,754	4,483	[2] 243	4,790	3,111	3,338
Railway cars and parts					1,408	3,182	2,749	1,332
Medicinal and pharmaceutical preparations					486	2,797	2,529	2,177
Paints, stains, enamels					326	1,421	1,048	1,449
Imports					**122,077**	**261,873**	**250,600**	**256,552**
Pineapples					1,156	3,234	2,059	2,117
Sugar, cane, million lbs.	3,866	7,846	8,560	7,294	91,686	199,780	198,895	207,437
Molasses, 1,000 gals.	30,956	238,932	232,808	218,654	1,038	16,927	8,599	8,923
Tobacco, cigar leaf, 1,000 lbs.	25,147	21,133	22,562	23,254	15,006	22,207	22,528	19,955
Cigars and cheroots, do.	[2] 659	512	418	408	[2] 3,996	4,313	3,279	3,726
Iron ore, 1,000 tons	1,324	546	539	392	3,864	2,075	2,005	1,499
Copper ore, concentrates, matte, 1,000 lbs.	9,535	31,162	19,904	29,372	804	3,817	2,484	3,695

[1] Stated in linear yards for years 1910–1914.

[2] Year ended June 30, 1913.

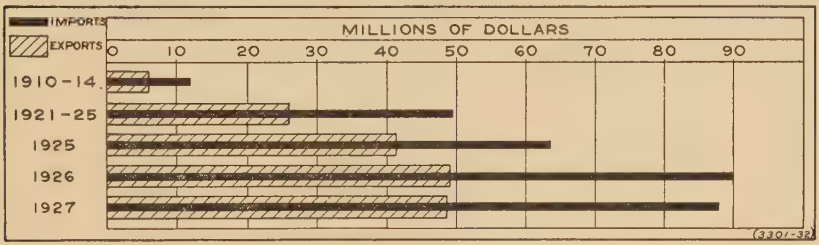
WEST INDIES OTHER THAN CUBA

Exports to the West Indies other than Cuba and to the Bermudas aggregated $66,800,000 in 1927, an increase of 15 per cent as compared with 1926. About half of the gain in value resulted from larger shipments to the Dominican Republic, although sales to practically all the islands were somewhat larger. Imports increased 15.4 per cent to a value of $66,100,000. While most of the islands shared in the gain, the largest expansion was shown by the trade with the Netherland West Indies and resulted from increased imports of crude petroleum, which totaled $14,229,000 in 1927 as compared with $9,690,000 in 1926.

COLOMBIA

Trade with Colombia fell off slightly from the high value attained in 1926; exports totaled $48,700,000 and imports $87,800,000 in 1927. The largest single commodity in the export trade—cotton cloth—was reduced in quantity and value as compared with 1926, while iron and steel sheets (galvanized), electrical machinery and apparatus, automotive products, typewriters, and medicinal preparations showed

Chart XX.—TRADE OF THE UNITED STATES WITH COLOMBIA



considerable gains. Coffee was much the largest commodity in the import trade, although coffee imports decreased $8,700,000 in 1927 to a value of $65,600,000. Imports of crude petroleum totaled $13,600,000 in 1927 as compared with $7,300,000 in 1926.

Table 37.—Principal Commodities in the Trade of the United States with Colombia

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					5,764	41,377	49,281	48,716
Lard, 1,000 lbs.	1,830	5,255	14,545	10,115	191	1,018	2,591	1,650
Wheat flour, 1,000 bbls.	25	64	122	86	128	548	951	648
Cotton yarn, thread, cordage, 1,000 lbs.		1,591	1,221	1,321	30	716	488	426
Cotton cloth, 1,000 sq. yds.[1]	19,122	43,452	33,141	28,734	963	5,881	4,316	3,487
Cotton hosiery, 1,000 doz. prs.		212	250	177		421	503	355
Iron and steel sheets, galvanized, 1,000 lbs.	[2]5,668	15,623	17,903	21,153	[2]182	719	819	996
Tubular products and fittings, do.	1,327	102,042	74,216	51,777	48	4,138	2,801	2,087
Electrical machinery and apparatus					[2]149	685	1,148	1,513
Industrial machinery					[2]828	3,620	5,800	5,753
Typewriters, number		5,504	6,860	8,876	50	304	353	455
Automobiles, passenger, do.	[2]110	1,413	1,645	1,785	[2]113	1,242	1,598	1,963
Motor trucks and busses, do.	[2]3	829	1,327	1,670	[2]6	676	1,546	1,994
Medicinal and pharmaceutical preparations					212	1,228	1,303	1,437
Imports					11,946	63,376	90,242	87,803
Cattle hides, 1,000 pieces		259	195	170	952	1,308	959	1,007
Bananas, 1,000 bunches	2,009	2,195	2,364	1,630	718	1,935	2,097	1,437
Coffee, 1,000 lbs.	70,516	212,237	272,458	252,173	7,849	54,915	74,279	65,585
Crude petroleum, 1,000 bbls.			3,621	7,962			7,264	13,559
Platinum (grains, scrap, ingots, sheets), ozs. (troy)	7,316	33,595	38,984	52,050	232	3,020	3,486	4,398

[1] Stated in linear yards for years 1910–1914.

[2] Year ended June 30, 1913.

VENEZUELA

Exports to Venezuela amounted to $34,700,000 in 1927 as compared with $39,700,000 in 1926. The demand for oil-line pipe, automobiles, and motor trucks, which was exceptionally large during 1926 as a result of the extensive development of oil fields in the Maracaibo region, receded somewhat in 1927. (See Table 38.) Imports increased from $23,300,000 in 1926 to a value of $28,600,000 in 1927. Crude petroleum more than doubled in value and aggregated $14,900,000 in 1927, thus becoming the leading commodity in the import trade. Coffee, by declining 10 per cent in quantity and 25 per cent in value, dropped to second place among the import commodities. The value of cocoa imported from Venezuela increased in 1927 as a result of higher prices.

Table 38.—Principal Commodities in the Trade of the United States with Venezuela

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					4,486	25,157	39,690	34,743
Wheat flour, 1,000 bbls.	161	125	148	173	782	1,015	1,150	1,269
Automobile tires (casings), number		25,447	19,912	26,760		362	461	456
Cotton cloth, 1,000 sq. yds.[1]	4,732	9,925	7,664	5,577	361	1,574	1,170	853
Boards, etc., southern pine, 1,000 bd. ft.	[2] 1,583	8,205	18,153	8,495	[2] 48	419	969	487
Tubular products and fittings, 1,000 lbs.	1,658	54,053	116,780	75,649	61	2,597	5,339	3,584
Oil-well machinery, do.		13,756	41,390	36,287		2,288	4,657	4,857
Automobiles, passenger, number	[2] 104	2,346	2,399	1,858	[2] 109	1,881	2,183	1,684
Motor trucks and busses, do.	[2] 23	845	1,231	684	[2] 34	700	1,265	685
Medicinal and pharmaceutical preparations					166	597	571	645
Imports					9,122	19,564	23,316	28,598
Cattle hides and skins, 1,000 pieces		113	78	63	1,065	460	353	335
Goat and kid skins, do.		758	880	709	458	373	381	296
Cocoa or cacao beans, 1,000 lbs.	4,719	19,458	12,926	12,745	612	2,608	1,747	2,020
Coffee, do.	45,807	55,600	53,036	47,765	5,736	13,364	12,829	9,621
Crude petroleum, 1,000 bbls.		1,419	5,197	11,424		1,585	6,870	14,946

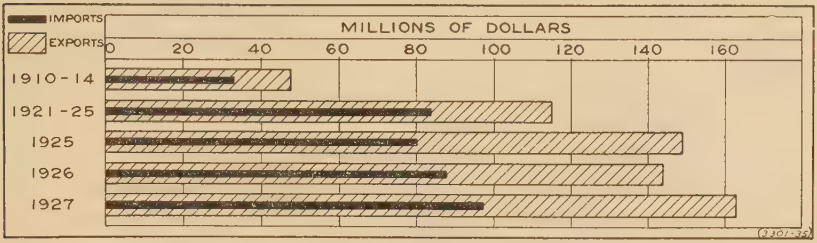
[2] Year ended June 30, 1913. [1] Stated in linear yards for years 1910–1914.

ARGENTINA

Exports to Argentina, our largest South American market, increased 14 per cent in 1927 to a total of $163,300,000, which was the largest value ever reported, except for the year 1920. In 1927 Argentina was our second largest market for motor trucks and busses and the third largest for passenger automobiles, the export values being $7,200,000 and $21,400,000, respectively. The quantity of motor trucks and busses exported was more than four times as large as in 1926. Noteworthy increases also occurred in the sales of automobile tires, cotton yarns, cotton cloth, refined mineral oils, lumber, electrical machinery and apparatus, and industrial machinery.

Imports were valued at $96,960,000, an increase of 10 per cent over the previous year, largely by reason of higher prices of cattle hides

Chart XXI.—TRADE OF THE UNITED STATES WITH ARGENTINA



and increased quantities imported. The value of flaxseed, which is the most important commodity in the import trade, was 6 per cent less in 1927 than in 1926, while wool imports fell off about two-fifths.

Table 39.—Principal Commodities in Trade of the United States with Argentina

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**47,169**	**148,759**	**143,575**	**163,350**
Automobile tires (casings), thousand		178	201	305		2,022	2,818	3,254
Cotton yarn, thread, cordage, 1,000 lbs		12,363	12,590	16,231	85	5,730	5,420	7,089
Cotton cloth, 1,000 sq. yds.[1]	1,568	22,084	18,840	23,353	184	3,637	3,126	3,942
Hosiery, cotton and silk, 1,000 doz. prs		948	295	224		2,898	1,751	1,530
Boards, etc., southern pine, 1,000 bd. ft	[2]212,357	193,670	140,332	199,601	[2] 4,187	9,221	6,210	8,288
Cooperage shooks, tight, 1,000 sets		638	842	611		2,048	2,755	2,006
Gasoline and naphtha, 1,000 bbls	286	720	681	1,350	1,890	6,730	5,773	7,129
Illuminating oil, do	477	325	326	336	2,060	2,111	2,503	2,001
Gas and fuel oil, do	[2] 11	1,247	2,140	4,308	[2] 35	1,471	2,250	3,883
Lubricating oil, do	100	197	211	321	817	3,061	3,414	5,022
Iron and steel sheets, galvanized, 1,000 lbs	18,536	79,841	23,200	20,724	514	3,943	982	916
Tubular products, do	9,209	33,102	37,635	40,720	274	1,626	1,868	1,530
Electrical machinery and apparatus					[2] 576	3,768	4,676	6,428
Industrial machinery					[2] 2,817	7,480	7,048	8,589
Agricultural machinery and implements					[2] 7,425	18,024	17,078	16,538
Automobiles, passenger, number	[2] 1,062	31,489	25,547	34,245	[2] 1,182	20,489	16,955	21,357
Motor trucks and busses, do	[2] 35	1,881	2,480	10,554	[2] 78	1,751	2,210	7,248
Automobile engines and parts					56	6,955	6,811	8,713
Imports					**32,878**	**80,170**	**88,058**	**96,961**
Cattle hides, 1,000 pieces		1,803	1,616	2,492	12,782	15,195	12,237	22,892
Sheep and lamb skins, do		3,506	3,320	3,500	610	3,625	2,812	2,679
Furs, undressed					11	3,453	3,588	5,020
Flaxseed, 1,000 bus	1,938	10,537	19,443	19,365	3,578	25,167	34,936	32,853
Quebracho, dyeing extract, 1,000 lbs	66,690	91,527	89,839	101,822	2,063	3,205	3,301	4,511
Carpet wool, do	3,935	6,260	6,480	10,000	502	1,635	1,349	2,256
Clothing wool, do	22,407	6,376	2,126	2,596	4,662	2,668	618	682
Combing wool, do	933	23,947	31,729	14,993	176	10,794	10,552	4,130

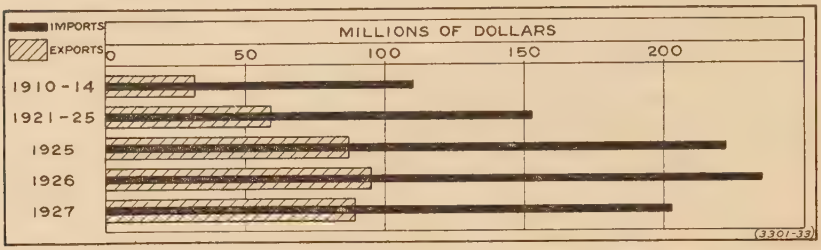
[1] Stated in linear yards for years 1910–1914. [2] Year ended June 30, 1913.

BRAZIL

Both the export and import trade of the United States with Brazil declined in 1927 from the previous year, the decreases being 7 per cent and 14 per cent, respectively. Smaller sales of wheat flour, coal,

gasoline, and passenger automobiles largely accounted for the decreased value of exports. Notable increases appeared in shipments of automobile tires, cotton cloth, cotton yarns, industrial machinery,

Chart XXII.—TRADE OF THE UNITED STATES WITH BRAZIL



and motor trucks and busses. The decline in import values was attributable to the lower prices paid for coffee and rubber. Larger quantities of coffee, rubber, hides and skins, and cocoa were purchased in 1927 than a year earlier.

Table 40.—Principal Commodities in Trade of the United States with Brazil

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**31,484**	**87,461**	**95,449**	**88,747**
Lard, 1,000 lbs.	725	8,165	747	8	93	1,618	136	1
Malt, 1,000 bush.		1,081	764	549		1,390	846	629
Wheat flour, 1,000 bbls.	567	757	988	854	3,016	6,193	7,574	6,036
Automobile tires (casings), number		91,911	78,128	157,207		923	944	1,773
Rosin, 1,000 bbls.	87	96	103	146	970	1,506	2,373	2,375
Cotton yarn, thread, cordage, 1,000 lbs.		1,641	1,044	1 554	87	1,127	813	1,319
Cotton cloth, 1,000 sq. yds.[1]	1,392	7,402	4,373	6,963	138	1,210	824	1,300
Coal, bituminous, 1,000 tons	185	587	1,191	368	584	2,714	6,522	1,975
Gasoline, naphtha, etc., 1,000 bbls.	109	1,013	1,055	943	765	8,538	8,546	6,780
Illuminating oil, do.	778	657	623	648	2,989	3,985	4,419	4,237
Lubricating oil, do.	63	238	204	231	543	2,855	2,282	2,726
Iron and steel sheets, galvanized, 1,000 lbs.	[2] 3,511	12,944	21,853	23,506	[2] 102	574	1,045	1,071
Tin plate, terneplate, etc., do.	2,812	9,071	13,119	21,789	101	449	624	1,027
Rails, tons	34,795	6,124	23,057	22,642	1,084	255	1,076	969
Barbed wire, 1,000 lbs.	24,983	31,615	14,242	20,406	623	997	410	572
Insulated copper wire and cable, 1,000 lbs.		2,035	1,278	2,940	[3] 323	438	314	566
Locomotives, number	[2] 210	86	53	52	[2] 2,311	1,945	1,339	2,400
Other industrial machinery					[2] 4,048	5,333	4,382	8,569
Typewriters, number		11,728	11,645	11,099	252	731	752	692
Motor trucks and busses, do.	[2] 36	4,695	5,886	11,061	[2] 75	1,921	2,701	5,350
Automobiles, passenger, do.	[2] 987	13,974	16,703	14,068	[2] 1,035	9,204	10,192	9,284
Automobile engines, parts and accessories					51	6,703	4,002	3,097
Railway cars and parts					1,375	903	1,677	769
Imports					**110,878**	**221,572**	**235,307**	**203,018**
Sheep and lamb skins, 1,000 pieces		1,375	1,372	1,525	388	1,123	1,092	1,045
Goat and kid skins, do.		2,954	3,305	3,976	2,043	2,524	2,539	3,189
Brazil or cream nuts, 1,000 lbs.	10,548	21,314	45,693	23,663	945	2,222	2,870	2,352
Castor beans, do.	4,139	19,756	10,084	12,841	87	917	310	435
Vegetable wax, do.	1,922	3,823	4,798	6,094	563	924	1,573	1,846
Cocoa or cacao beans, million lbs.	17	72	91	104	1,775	6,633	8,814	13,561
Coffee, do.	673	872	1,013	1,023	73,424	184,793	199,663	164,773
Rubber, crude, 1,000 lbs.	40,291	34,715	29,659	38,146	29,991	16,174	11,845	9,699
Diamonds (glaziers', engravers', miners'), carat		19,332	16,713	14,463	[3] 52	926	962	907
Manganese ore, 1,000 tons	62	110	131	174	462	2,756	3,429	1,585

[1] Stated in linear yards for years 1910–1914. [2] Year ended June 30, 1913. [3] Year ended June 30, 1914.

PARAGUAY

United States statistics underestimate our foreign trade with Paraguay, as a large part of our trade with that country is indirect, passing through either Argentina or Uruguay. About half of our exports to Paraguay consists of textiles (principally cotton cloth). Other articles exported are cutlery, tools, machinery, and automotive products. Quebracho extract is a large part of our import trade from Paraguay. According to Paraguayan statistics in 1926, the United States ranked second among the nations of the world both in furnishing imports to that country and as a destination for its exports.

URUGUAY

Exports to Uruguay have shown a steady growth since 1922 and in 1927 reached the total value of $24,970,000. This trade consists largely of manufactured and semimanufactured products and includes a great variety of articles, the most important of which are shown in the accompanying table.

Imports into the United States from Uruguay decreased 41 per cent to a value of $10,900,000 in 1927, largely as a result of a decline of one-half in the quantity of wool imported and a further decrease in price. Hides and skins, which showed particularly large gains during 1926, fell off considerably in value during 1927.

Table 41.—Principal Commodities in Trade of the United States With Uruguay

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					5,927	21,270	23,015	24,973
Sugar, refined, 1,000 lbs.	2	67,731	43,021	34,348	(1)	2,530	1,481	1,364
Automobile tires (casings), number		34,003	29,461	33,431		398	421	385
Cotton yarn, 1,000 lbs.		784	1,332	1,500	2	391	518	625
Cotton cloth, 1,000 sq. yds.[2]	476	3,721	3,741	3,153	56	573	531	408
Boards, etc., southern pine, 1,000 bd. ft.	[3] 42,777	21,224	17,216	26,004	[3] 854	951	769	1,130
Gasoline, naphtha, etc., 1,000 bbls.	25	230	392	353	178	2,403	3,102	2,818
Illuminating oil, do.	170	195	219	225	770	1,343	1,610	1,538
Gas and fuel oil, do.	[3] 3	386	809	1,441	[3] 9	461	794	1,264
Lubricating oil, do.	5	30	30	31	42	448	421	471
Tin plate, terneplate, etc., 1,000 lbs.	308	4,006	6,582	12,891	11	213	347	621
Motor trucks and busses, number	[3] 7	1,362	1,362	1,151	[3] 19	500	626	1,057
Automobiles, passenger, do.	[3] 209	4,639	4,970	3,248	[3] 273	2,430	2,464	2,318
Automobile parts and accessories					15	548	506	632
Imports					4,485	16,100	18,502	10,895
Cattle hides, 1,000 pieces		39	124	89	2,274	397	1,182	989
Sheep and lamb skins, do.		521	966	1,038	29	464	845	623
Clothing wool, 1,000 lbs.	4,204	2,850	698	407	980	1,464	273	126
Combing wool, do.	65	23,354	31,972	16,421	13	11,911	12,548	5,106

[1] Less than $500. [2] Stated in linear yards for years 1910–1914. [3] Year ended June 30, 1913.

BOLIVIA

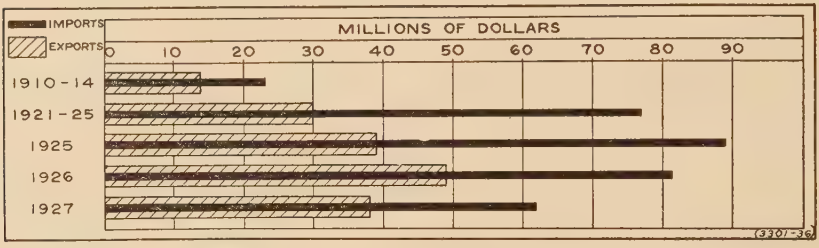
The foreign trade of Bolivia must pass through bordering countries, since Bolivia has no seaport. Consequently, the United States statistics do not show accurately the trade with that country, particularly in the case of imports. Principal exports to Bolivia from the United States are wheat flour, cotton cloth, petroleum products,

iron and steel, mining and quarrying machinery, other machinery, and automotive products. According to Bolivian statistics, the principal imports by the United States from that country are rubber, copper, tin, and silver.

CHILE

Chile ranks fourth in importance among the South American countries in both our export and import trade. In 1927 exports to and imports from Chile declined nearly one-fourth in value from a year earlier, the former amounting to $37,900,000 and the latter to

Chart XXIII.—TRADE OF THE UNITED STATES WITH CHILE



$61,900,000. Decreased shipments to Chile of many finished manufactures (see the accompanying table) were responsible for the falling off in exports, while the decline in imports was due to much smaller purchases of copper and nitrate.

Table 42.—Principal Commodities in Trade of the United States with Chile

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**13,870**	**39,274**	**49,043**	**37,889**
Cotton cloth, 1,000 sq. yds.[1]	10,641	23,517	23,796	23,894	731	3,491	2,996	2,517
Boards, etc., Douglas fir, 1,000 bd. ft.	[2] 63,271	32,599	29,619	20,750	[2] 777	659	587	399
Gas and fuel oil, 1,000 bbls.	[2] 1,387	5,084	4,348	4,350	[2] 924	6,688	4,289	3,881
Lubricating oil, do.	41	62	54	59	392	810	745	887
Paraffin wax, 1,000 lbs.	950	10,809	8,593	7,814	36	611	453	312
Iron and steel and manufactures of					[2] 3,772	4,696	7,818	5,068
Electrical machinery					[2] 371	1,750	5,066	2,531
Mining machinery					[2] 182	677	2,734	1,407
Construction and conveying machinery					[2] 2	1,321	1,967	497
Other industrial machinery					[2] 977	3,107	3,323	2,158
Motor trucks and busses, number	[3] 2	1,605	837	855	[3] 11	1,378	919	751
Automobiles, passenger, do.	[2] 78	1,635	1,548	1,786	[2] 110	1,104	1,096	1,289
Automobile parts					6	769	891	703
Railway cars and parts					263	765	1,171	733
Imports					**22,881**	**89,194**	**81,442**	**61,857**
Sheep and lamb skins, 1,000 pieces		642	668	685		910	617	714
Clothing wool, 1,000 lbs.	123	1,854	901	1,046	23	722	279	275
Combing wool, do.		3,305	1,746	565		1,665	555	149
Iron ore, 1,000 tons	[3] 7	1,114	1,364	1,369	[3] 8	3,222	1,561	1,561
Copper ore, concentrates, and matte, 1,000 lbs.	[2] 27,534	45,036	34,126	40,811	[2] 4,408	5,672	4,118	4,287
Copper, unrefined pigs, bars, do.	[2] 13,969	59,800	31,365	63,698	[2] 2,245	8,262	4,170	7,524
Copper, refined, do.		96,171	166,873	100,839		13,296	22,884	12,786
Sodium nitrate, 1,000 tons	535	1,100	898	736	17,069	51,842	41,885	29,459
Iodine, crude, 1,000 lbs.	405	246	711	702	811	890	2,272	2,041

[1] Stated in linear yards for years 1910–1914.
[2] Year ended June 30, 1913.
[3] Year ended June 30, 1914.

ECUADOR

Exports to Ecuador in 1927 totaled $5,500,000, which was an increase of 19 per cent over 1926. Cotton cloth, wheat flour, and lard are the leading commodities in this trade. Imports declined from $6,800,000 in 1926 to $5,200,000 in 1927, chiefly in consequence of a decline in shipments of cocoa, crude rubber, and hats of straw, etc. In 1927 imports of cocoa totaled $3,068,000, of crude rubber, $423,000, and of straw hats, $792,000.

PERU

United States exports to Peru in 1927 aggregated $24,900,000 as compared with $29,400,000 in 1926. This trade consists largely of manufactured articles, the most important group being industrial machinery. All the leading commodities—tubular products, industrial machinery, lumber, and lard—were exported in smaller quantities in 1927.

Imports were reduced 7.8 per cent from the previous year to a value of $20,100,000 owing to smaller movements of crude petroleum. Shipments of copper, cotton, and hides and skins were larger in 1927 than in 1926.

Table 43.—Principal Commodities in Trade of the United States with Peru

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**6,030**	**23,032**	**29,353**	**24,855**
Lard, 1,000 lbs.	2,785	10,177	11,373	7,249	324	1,882	1,865	1,196
Wheat flour, 1,000 bbls.	120	82	120	103	493	621	839	667
Cotton cloth, 1,000 sq. yds.[1]	2,018	4,688	5,824	3,878	144	824	931	602
Automobile tires (casings), number		16,910	12,984	19,954		301	322	359
Boards, etc., Douglas fir, 1,000 bd. ft.		52,700	80,439	70,330		1,055	1,549	1,366
Tin plate, terneplate, etc., 1,000 lbs.	413	9,097	7,816	9,141	16	449	336	427
Tubular products and fittings, do.	5,278	11,323	39,522	28,554	133	729	1,886	1,349
Industrial machinery					[2] 807	2,848	3,995	3,353
Motor trucks and busses, number		1,458	1,001	669		1,245	837	680
Automobiles, passenger, do.	70	1,195	1,071	831	56	977	776	627
Automobile parts and accessories					3	624	527	467
Medicinal and pharmaceutical preparations					175	412	490	392
Imports					**9,780**	**17,174**	**21,797**	**20,091**
Goat and kid skins, 1,000 pieces		398	373	461	240	252	271	308
Cotton unmanufactured, 1,000 lbs.	5,544	7,828	6,810	11,292	957	2,572	1,616	2,278
Crude petroleum, 1,000 bbls.	255	1,825	3,044	1,886	289	4,159	7,029	4,157
Unrefined copper (pigs, bars), 1,000 lbs.	[2]40,220	72,325	93,908	101,871	[2] 4,779	7,951	9,983	10,592

[1] Stated in linear yards for years 1910–1914.

[2] Year ended June 30, 1913.

TRADE WITH EUROPE

Europe continued in 1927 to rank first among the continents as a market for American exports and was the largest supplier of our imports; 48 per cent of our exports were sold to Europe and 30 per cent of our imports were purchased there.

Both exports and imports showed little change in value in 1927 as compared with 1926. (Table 44.) However, the decline of about 7 per cent in the price indexes of total United States exports and total imports (Table 6), indicate that there were increases in the volume of trade with Europe in both directions.

In considering the statistics for trade regions and individual countries it should be noted that the grouping of European countries into trade regions is necessarily somewhat arbitrary, as several of the countries are reached by two or even three different trade routes; that there is much indirect trade with the interior countries of the Continent; and that changes of boundaries of certain countries make accurate comparisons with pre-war years impossible.

Table 44.—Trade with Europe, by Commercial Regions and Countries

[Values in millions and tenths of millions of dollars]

Region and country	Exports					Imports				
	1910–1914	1921–1925	1925	1926	1927	1910–1914	1921–1925	1925	1926	1927
Europe, total	**1,350.3**	**2,317.9**	**2,603.8**	**2,310.1**	**2,313.8**	**836.5**	**1,049.5**	**1,238.2**	**1,285.9**	**1,276.2**
Northwestern and Central	**1,222.9**	**1,960.6**	**2,193.6**	**1,984.5**	**1,976.3**	**723.8**	**885.0**	**1,035.6**	**1,070.2**	**1,050.9**
Austria	[1] 20.6	2.2	2.9	2.9	4.4	[1] 18.1	4.1	5.9	9.4	10.6
Belgium	53.1	111.3	120.3	99.3	116.2	40.4	58.3	69.0	77.8	72.2
Czechoslovakia	-------	1.7	2.9	3.0	7.4	-------	17.4	22.8	28.3	31.7
Denmark	15.4	42.6	55.7	50.6	58.7	2.6	6.0	4.3	5.5	4.1
France	138.8	265.2	280.3	264.0	228.7	130.1	147.9	157.4	152.0	167.8
Germany	304.1	383.2	470.3	364.2	481.6	176.5	132.5	164.3	198.5	200.6
Hungary	(1)	.3	.8	1.0	1.8	(1)	.6	.7	.9	.9
Irish Free State	-------	-------	7.3	17.0	10.9	-------	-------	1.3	1.5	1.6
Netherlands	104.6	138.2	141.5	135.8	148.3	34.9	70.6	92.5	101.9	87.2
Norway	7.8	28.1	26.2	24.9	23.4	8.1	18.5	23.3	25.1	22.2
Sweden	10.0	39.4	42.5	40.9	44.6	9.5	34.1	41.0	44.0	47.9
Switzerland	.8	7.2	8.8	8.3	10.1	24.7	38.8	40.3	42.0	45.9
United Kingdom	567.6	939.0	1,033.9	972.6	840.1	278.9	355.7	412.7	383.2	357.9
Northeastern	**25.9**	**58.3**	**90.5**	**67.0**	**92.0**	**19.3**	**17.7**	**27.3**	**34.9**	**30.9**
Estonia	-------	2.1	1.6	.8	.9	-------	.4	.3	1.2	.4
Finland	[2] 3.0	10.4	12.8	12.9	16.5	[2] 2	7.5	7.2	9.1	8.7
Latvia	-------	3.0	1.3	.7	1.0	-------	2.6	3.7	6.0	4.5
Lithuania	-------	.1	(3)	.1	.2	-------	.3	.8	.9	.5
Poland and Danzig	-------	10.9	6.6	3.9	9.3	-------	2.4	2.5	4.1	4.8
Soviet Russia in Europe	23.5	31.7	68.2	48.5	64.1	19.1	4.6	12.8	13.5	12.0
Southwestern	**96.5**	**268.1**	**295.6**	**240.2**	**219.6**	**79.6**	**115.1**	**140.5**	**151.1**	**149.7**
Azores, and Madeira Islands	.2	1.0	1.1	1.3	1.9	.3	2.5	1.7	1.6	1.8
Gibraltar	.5	3.4	1.3	1.7	1.5	(3)	(3)	(3)	(3)	.1
Italy	66.0	185.2	205.2	157.4	131.7	51.1	79.1	102.2	102.5	108.9
Portugal	3.6	8.0	8.7	11.6	10.7	6.6	3.9	3.7	5.6	4.6
Spain	26.2	70.5	79.2	68.2	73.8	21.6	29.6	32.9	41.4	34.4
Southeastern	**5.1**	**30.9**	**24.1**	**18.4**	**25.9**	**13.8**	**31.6**	**34.7**	**29.6**	**44.8**
Bulgaria	.2	.7	.3	.4	.5	.4	1.0	1.0	1.3	.9
Greece	.9	17.2	16.6	10.4	15.0	3.3	22.3	26.2	16.9	29.6
Malta, Gozo, and Cyprus Islands	.4	1.4	1.2	1.3	1.1	(3)	.2	.2	.2	.2
Rumania	1.4	2.4	2.2	3.1	4.9	.2	.3	.3	1.1	.6
Turkey in Europe	2.2	8.1	2.8	2.5	3.4	8.9	7.4	5.6	9.0	12.4
Yugoslavia and Albania	(3)	1.2	1.0	.8	1.0	1.0	.5	1.4	1.2	1.0

[1] Figures given for Austria are for Austria-Hungary.
[2] 4-year average, 1911–1914.
[3] Less than $50,000.

Table 45.—Percentages of Distribution and Change in Trade with European Countries

Region and country	Per cent of total exports			Per cent of total imports			Per cent change in 1927 exports from—			Per cent change in 1927 imports from—		
	1910–1914	1921–1925	1927	1910–1914	1921–1925	1927	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926
Europe, total	**62.3**	**52.7**	**47.6**	**49.5**	**30.4**	**30.5**	**+71.4**	**−0.2**	**+0.2**	**+52.6**	**+21.6**	**−0.7**
Northwestern and Central	**56.5**	**44.6**	**40.6**	**42.9**	**25.7**	**25.1**	**+61.6**	**+.8**	**−.4**	**+45.2**	**+18.7**	**−1.8**
Belgium	2.5	2.5	2.4	2.4	1.7	1.7	+118.8	+4.4	+17.0	+79.0	+23.8	−7.1
Czechoslovakia	.....	(1)	.2	.....	.5	.8	.....	+347.0	+150.7	.....	+82.7	+12.1
Denmark	.7	1.0	1.2	.2	.2	.1	+281.2	+37.7	+16.0	+59.4	−31.3	−24.9
France	6.4	6.0	4.7	7.7	4.3	4.0	+64.8	−13.7	−13.4	+28.9	+13.5	+10.4
Germany	14.0	8.7	9.9	10.4	3.8	4.8	+58.4	+25.7	+32.2	+13.7	+51.4	+1.0
Netherlands	4.8	3.1	3.0	2.1	2.0	2.1	+41.8	+7.3	+9.2	+149.5	+23.4	−14.4
Norway	.4	.6	.5	.5	.5	.5	+198.8	−16.8	−6.1	+175.0	+20.2	−11.3
Sweden	.5	.9	.9	.6	1.0	1.1	+344.7	+13.1	+9.2	+402.5	+40.6	+8.8
United Kingdom	26.2	21.4	17.3	16.5	10.3	8.6	+48.1	−10.7	−13.6	+28.3	+.5	−6.6
Northeastern	**1.2**	**1.3**	**1.9**	**1.1**	**.5**	**.7**	**+255.5**	**+57.9**	**+37.3**	**+60.6**	**+74.5**	**−11.5**
Finland	.....	.2	.3	.....	.2	.2	+444.0	+57.9	+27.7	+5,566.7	+14.8	−4.8
Poland, including Danzig	.....	.2	.2	.....	.1	.1	.....	−14.9	+135.1	.....	+103.7	+16.3
Soviet Russia in Europe	1.1	.7	1.3	1.1	.1	.3	+173.2	+101.9	+32.1	−37.3	+163.4	−11.1
Southwestern	**4.5**	**6.1**	**4.5**	**4.7**	**3.3**	**3.6**	**+127.7**	**−19.1**	**−8.6**	**+88.1**	**+30.0**	**−.9**
Italy	3.0	4.2	2.7	3.0	2.3	2.6	+99.6	−28.9	−16.4	+112.9	+37.6	+6.2
Portugal	.2	.2	.2	.4	.1	.1	+195.6	+33.3	−8.3	−30.3	+18.4	−17.9
Spain	1.2	1.6	1.5	1.3	.9	.8	+181.7	+4.7	+8.2	+59.0	+15.9	−17.0
Southeastern	**.2**	**.7**	**.5**	**.8**	**.9**	**1.1**	**+411.2**	**−16.3**	**+40.6**	**+223.9**	**+41.5**	**+51.1**
Greece	(1)	.4	.3	.2	.6	.7	+1,621.4	−12.4	+45.2	+790.2	+33.2	+75.3
Turkey in Europe	.1	.2	.1	.5	.2	.3	+51.9	−58.1	+34.7	+39.9	+67.0	+38.0

[1] Less than one-tenth of 1 per cent.

NORTHWESTERN AND CENTRAL EUROPE

About two-fifths of the total exports of the United States in 1927 were sent to the large industrial nations of northwestern and central Europe, a proportion somewhat smaller than in other recent years and considerably less than in the years before the war. Exports to this group of countries in 1927 were valued at $1,976,300,000, a total slightly smaller than in 1926. The decline was attributable to lower prices and appeared only in trade with France, the Irish Free State, Norway, and the United Kingdom. Exports to all other countries in this region were considerably larger. Imports from northwestern and central Europe aggregated $1,050,900,000 in 1927 as compared with $1,070,200,000 in 1926. The decrease of 1.8 per cent was largely the result of a decline in the value of trade with Belgium, Netherlands, and the United Kingdom.

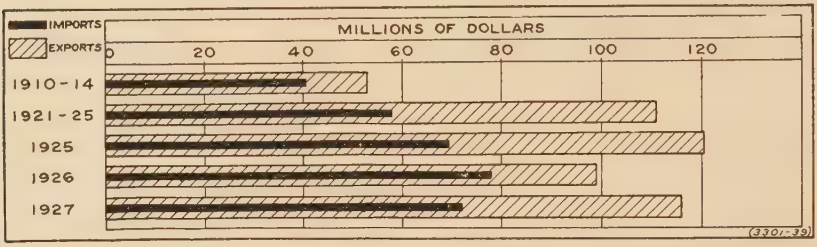
AUSTRIA

Trade of the United States with Austria passes through other countries and the recorded statistics of exports are much too small. Imports from Austria were valued at $10,600,000 in 1927, an increase of one-eighth over the previous year. American exports consist largely of cotton, grain, copper, adding and calculating machines, typewriters, and automobiles, while our principal imports from Austria are aluminum, manufactures of leather and silk, hats, electric lamps, and paper base stocks.

BELGIUM

Exports to Belgium totaled $116,200,000 in 1927, which was 17 per cent more than in 1926. The gains appeared chiefly in wheat, linseed cake, cotton, and motor vehicles, while shipments of pork

Chart XXIV.—TRADE OF THE UNITED STATES WITH BELGIUM



products continued to decline. Very marked expansion has occurred in exports of passenger automobiles to Belgium since 1924 and in 1927 the sales amounted to $12,200,000, which was 93 per cent more than in 1926.

Table 46.—Principal Commodities in Trade of the United States with Belgium

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**53, 117**	**120, 258**	**99, 299**	**116, 201**
Hams and shoulders, cured 1,000 lbs	7, 863	8, 457	1, 558	514	920	1, 199	234	72
Bacon do	4, 901	5, 253	3, 796	2, 602	664	888	521	329
Lard do	17, 076	16, 680	11, 796	12, 716	1, 852	2, 778	1, 728	1, 688
Barley, grain 1,000 bush	283	2, 631	546	1, 876	172	2, 519	390	1, 603
Wheat, grain do	7, 195	7, 490	6, 696	11, 574	7, 135	13, 389	10, 015	16, 852
Linseed cake 1,000 lbs	288, 955	162, 986	126, 462	226, 372	4, 243	3, 672	2, 678	4, 605
Tobacco, leaf do	11, 620	14, 255	21, 592	26, 293	1, 246	2, 310	2, 243	2, 435
Cotton, unmanufactured 1,000 bales	175	202	230	266	10, 689	25, 397	22, 039	23, 816
Gasoline and naphtha 1,000 bbls	145	1, 158	1, 207	1, 126	561	6, 989	5, 852	5, 131
Lubricating oil do	273	833	677	799	1, 456	5, 118	4, 353	4, 830
Copper (ingots, bars) 1,000 lbs	[1] 7, 834	90, 951	82, 059	89, 498	[1] 1, 298	13, 466	11, 471	11, 835
Zinc ore, concentrates, dross					8	3, 257	2, 729	1, 027
Motor trucks and busses number		2, 269	1, 926	4, 123		889	756	1, 789
Automobiles, passenger do	[1] 94	5, 193	6, 542	13, 686	[1] 86	4, 318	6, 338	12, 220
Automobile parts					10	2, 680	1, 998	1, 390
Imports					**40, 360**	**69, 019**	**77, 793**	**72, 240**
Furs, undressed					1, 186	4, 026	5, 474	6, 013
Manufactures of flax, hemp, ramie					1, 765	5, 592	5, 899	6, 739
Cement, hydraulic 1,000 bbls	54	1, 918	2, 407	1, 487	53	2, 994	3, 740	2, 084
Cylinder glass, unpolished 1,000 lbs	23, 686	29, 987	59, 342	64, 469	760	1, 239	1, 768	1, 714
Plate glass, unsilvered 1,000 sq. ft	2, 206	8, 743	14, 775	10, 446	499	3, 678	4, 894	2, 874
Diamonds, cut but not set 1,000 carats		239	255	197	10, 294	21, 337	20, 876	15, 973
Structural shapes and building forms 1,000 lbs	[1] 1, 421	141, 886	190, 798	230, 972	[1] 21	1, 800	2, 341	3, 010
Dead or creosote oil 1,000 gals	2, 701	10, 018	21, 724	19, 034	127	1, 317	3, 007	3, 203

[1] Year ended June 30, 1913.

Imports declined 7 per cent to a total of $72,200,000, chiefly as a result of a decrease of almost one-fourth in the value of diamonds, the leading item in the trade. Cement and plate glass imported from Belgium amounted to about three-fifths as much as in 1926. On the other hand, undressed furs, manufactures of flax, hemp, and ramie, and structural shapes and building forms gained considerably in value.

CZECHOSLOVAKIA

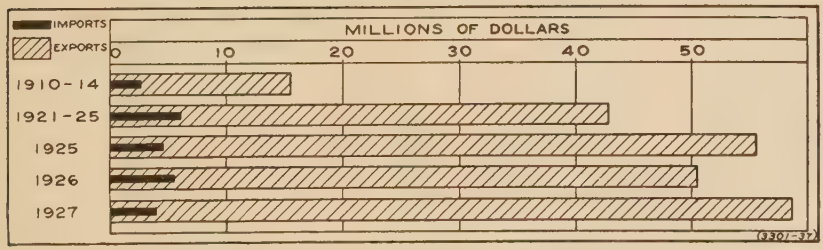
United States statistics of exports to Czechoslovakia are much too low, owing to a large amount of indirect trade. Czechoslovak statistics showed $22,500,000 as the value of goods imported for consumption from the United States in 1926 as compared with $3,000,000 reported exports by the United States. Our statistics indicate significant gains in both export and import trade in 1927. Imports increased 12 per cent and aggregated $31,700,000 in value. Leading import commodities in 1927 were as follows: Glass and glassware, $3,469,000; decorated china and earthenware, $1,154,000; imitation precious stones, $1,848,000; beads, $1,147,000.

Reported exports totaled $7,400,000, an increase of 151 per cent, and included cotton, fats and oils, grains and flour, copper, automotive products, office equipment, and rubber goods.

DENMARK

The outgoing shipments to Denmark occupy a much more prominent place in United States trade than imports. In 1927 exports to Denmark totaled $58,700,000, an increase of 16 per cent as compared with 1926. Cottonseed cake, the leading commodity in the trade, was 67 per cent greater in value than in 1926. Passenger automobiles

Chart XXV.—TRADE OF THE UNITED STATES WITH DENMARK



gained 48 per cent and represented the second largest export item. Wheat flour, motor trucks and busses, gasoline, and rubber tires (casings) also showed substantial gains. The values of exports for 1927 were as follows: Wheat flour, $3,565,000; illuminating oil, $1,479,000; cottonseed cake, $9,076,000; lubricating oil, $1,279,000; rubber tires (casings), $1,387,000; passenger automobiles, $8,490,000; cotton,

$3,459,000; automobile parts, $2,362,000; gasoline, $4,948,000; motor trucks and busses, $3,430,000.

Imports were $4,100,000 in 1927 as compared with $5,500,000 in 1926. Butter, hides and skins, furs, and cement are the most important commodities.

FRANCE

Exports to France showed a further decline of 13.4 per cent in 1927 and aggregated $228,700,000, partly because of smaller quantities moving and still more through sharp price changes. Copper fell off 37 per cent in quantity and 40 per cent in value, while gasoline declined 8 per cent in quantity and 32 per cent in value. Other commodities which showed considerable declines in both quantity and value were coal, illuminating oil, lubricating oil, and cotton. Exports of wheat to France were considerably more in 1927 than in other recent years.

Table 47.—Principal Commodities in Trade of the United States with France

[Values in thousands of dollars]

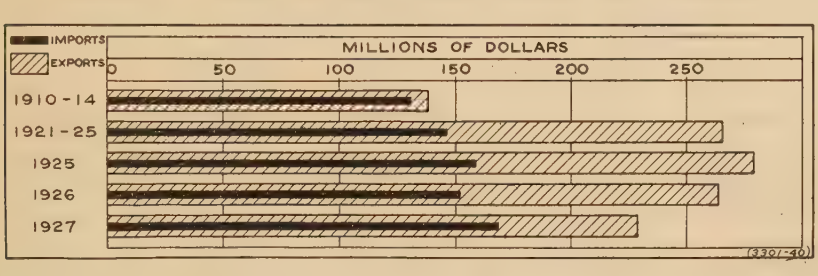
Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**138, 841**	**280, 299**	**264, 004**	**228, 746**
Lard, 1,000 lbs	12, 090	4, 447	3, 888	4, 782	1, 236	744	584	658
Wheat, grain, 1,000 bus	3, 002	7, 946	8, 925	11, 832	2, 979	14, 384	13, 290	18, 238
Prunes, 1,000 lbs	10, 226	38, 409	22, 915	26, 444	712	2, 810	1, 494	1, 471
Sugar, do	1	29, 436	13, 603	3, 443	(1)	1, 024	426	143
Tobacco, leaf, do	42, 503	21, 723	49, 573	38, 082	4, 083	2, 894	4, 256	3, 603
Cotton, unmanufactured, 1,000 bales	1, 042	918	1, 009	945	68, 783	117, 567	95, 581	93, 498
Coal, bituminous, 1,000 tons	50	234	486	107	139	1, 097	2, 933	614
Gasoline and naphtha, 1,000 bbls	410	6, 143	7, 398	6, 833	1, 770	33, 478	41, 366	28, 147
Illuminating oil, do	1, 149	1, 428	2, 066	1, 129	2, 758	3, 683	6, 420	3, 014
Lubricating oil, do	549	1, 708	1, 588	1, 255	2, 901	14, 198	12, 044	9, 128
Copper (ingots, bars, rods), 1,000 lbs	119, 795	146, 595	177, 935	112, 722	[2] 19, 445	21, 192	25, 244	15, 143
Safety-razor blades, 1,000 doz		1, 837	1, 429	2, 013		1, 089	1, 057	1, 182
Adding and calculating machines, number	[2] 750	3, 704	4, 375	4, 520	[2] 103	1, 134	1, 609	1, 235
Typewriters, do		32, 080	34, 763	33, 591	1, 034	1, 900	1, 836	2, 033
Automobile parts, do					109	4, 244	2, 139	1, 820
Imports		**50**	**6, 350**		**130, 130**	**157, 433**	**152, 020**	**167, 788**
Cattle hides, 1,000 pieces		63	50	111	2, 830	768	452	991
Calf and kip skins, do		373	567	763	1, 148	1, 233	1, 505	2, 402
Undressed furs					782	4, 368	4, 478	6, 438
Gloves, leather, 1,000 pairs		3, 853	4, 542	4, 647	3, 334	3, 443	4, 029	4, 964
Walnuts, 1,000 lbs	21, 026	26, 062	19, 918	11, 657	2, 906	6, 193	4, 861	4, 183
Vanilla beans, do	157	510	841	644	432	3, 227	1, 899	1, 162
Clover seed, do	7, 979	15, 309	20, 144	6, 685	734	2, 510	3, 182	1, 394
Cotton sewing thread, million yds		2, 124	1, 318	1, 285		3, 014	1, 909	1, 628
Cotton cloth, colored, dyed, 1,000 sq. yds	[2] 3, 037	2, 303	2, 165	2, 208	[2] 939	975	832	1, 017
Cotton laces, machine made						4, 340	3, 112	3, 020
Spun silk or schappe silk yarn, 1,000 pounds	824	628	340	479	1, 477	2, 212	924	1, 024
Silk fabrics, do		390	499	484	4, 699	2, 869	3, 257	3, 881
Silk wearing apparel					2, 648	4, 949	5, 826	6, 025
Wool fabrics, 1,000 lbs		938	625	900	2, 207	2, 490	1, 578	2, 634
Rags for paper stock, do	43, 598	97, 150	96, 618	84, 338	447	2, 654	2, 050	1, 528
Cigarette paper, do		10, 504	8, 094	14, 518	[2] 555	2, 891	2, 134	4, 242
Pearls not strung					2, 372	5, 021	2, 995	3, 193
Other precious and semiprecious stones					4, 620	4, 017	4, 367	4, 562
Gold and silver threads, braids, fabrics, laces, etc, pounds						3, 459	4, 943	3, 519
Perfumery, cosmetics, etc					1, 476	5, 142	4, 494	5, 887
Works of art (100 years old), pounds					15, 596	11, 161	12, 690	11, 137

[1] Less than $500.

[2] Year ended June 30, 1913.

Imports from France aggregated $167,800,000 in 1927, which was a record figure for incoming trade. The accompanying table shows

Chart XXVI.—TRADE OF THE UNITED STATES WITH FRANCE

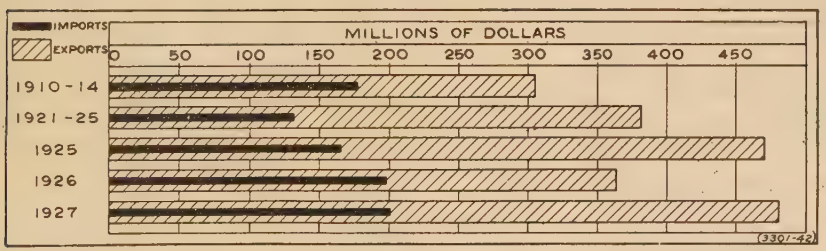


that the increases were distributed among many of the import commodities and were particularly large for hides and skins, undressed furs, wool fabrics, cigarette paper, perfumery, and cosmetics.

GERMANY

United States foreign trade with Germany in 1927 was the largest ever recorded. Exports reached a value of $481,600,000 and imports totaled $200,600,000. Exports of raw cotton, by far the largest commodity in the trade, totaled $230,700,000, an increase of 32 per cent from a year earlier, and even greater percentage gains appeared in the value of grains, prunes, lumber (southern pine), sulphur, lead, copper, metal-working machinery, automobiles, and typewriters exported.

Chart XXVII.—TRADE OF THE UNITED STATES WITH GERMANY



Meat products and cottonseed cake and meal were exported in smaller amounts than in 1926. The outstanding changes among import commodities were a gain of 46 per cent in the value of undressed furs imported and large declines in imports of crude rubber, paper base stocks, newsprint, and plate glass.

Table 48.—Principal Commodities in Trade of the United States with Germany

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**304, 098**	**470, 344**	**364, 162**	**481, 581**
Bacon, 1,000 lbs	1, 205	14, 779	9, 982	8, 820	149	2, 318	1, 384	1, 042
Lard, do	142, 311	193, 004	199, 534	184, 738	15, 683	33, 043	30, 910	24, 329
Furs, undressed, thousand		3, 225	2, 707	4, 057	[1] 6, 184	5, 023	3, 380	5, 768
Barley, grain, 1,000 bush	1, 562	6, 538	1, 205	10, 315	914	6, 421	894	9, 874
Rye, grain, do	94	6, 175	588	1, 918	65	8, 327	606	2, 192
Wheat, grain, do	6, 155	2, 504	6, 877	5, 472	6, 088	4, 302	10, 473	7, 843
Wheat flour, 1,000 bbls	187	1, 085	657	656	991	8, 574	4, 554	4, 369
Cottonseed cake and meal, 1,000 lbs	316, 183	144, 743	280, 822	194, 583	4, 448	3, 068	4, 508	3, 430
Prunes, do	29, 420	20, 638	28, 888	70, 009	1, 416	1, 242	1, 545	3, 065
Tobacco, leaf, do	36, 073	21, 587	27, 854	31, 387	4, 537	5, 125	5, 416	5, 915
Cotton, unmanufactured, 1,000 bales	2, 437	2, 029	2, 083	2, 611	154, 455	246, 315	175, 114	230, 695
Boards, etc., southern pine, 1,000 bd. ft	57, 728	33, 322	19, 831	39, 681	[1] 1, 434	2, 130	1, 241	2, 256
Rosin, 1,000 bbls	407	250	232	324	4, 021	3, 910	5, 331	5, 326
Gasoline and naphtha, do	263	1, 103	1, 590	1, 231	880	5, 782	9, 045	5, 658
Lubricating oil, do	544	990	825	1, 161	2, 949	7, 442	6, 005	7, 860
Sulphur, 1,000 tons	7	137	108	176	139	2, 638	2, 160	3, 806
Copper (ingots, bars), 1,000 lbs	249, 877	229, 291	153, 360	221, 842	41, 019	32, 991	21, 803	30, 326
Brass and bronze manufactures					692	4, 114	1, 819	4, 894
Lead (pigs, bars), 1,000 lbs		52, 187	35, 446	63, 925		3, 980	2, 301	3, 170
Metal-working machinery					2, 525	2, 986	1, 018	3, 175
Adding and calculating machines, number		6, 570	6, 675	8, 610	[1] 370	2, 285	1, 507	2, 063
Typewriters, do		12, 028	13, 872	20, 499	1, 147	698	686	1, 051
Automobiles, passenger, do	[1] 845	3, 623	3, 220	8, 281	[1] 764	4, 599	3, 439	8, 497
Imports					**176, 462**	**164, 251**	**198, 495**	**200, 554**
Furs, undressed					5, 480	6, 607	8, 881	12, 952
Gloves, leather, 1,000 pairs		2, 737	3, 259	3, 124	3, 281	2, 458	3, 124	3, 030
Rubber, crude, 1,000 lbs	7, 266	6, 884	3, 600	2, 814	5, 860	4, 863	1, 733	918
Tobacco, unmanufactured, do	1, 440	929	760	896	797	772	565	529
Cotton gloves, 1,000 doz. prs		1, 611	2, 040	2, 112		5, 319	6, 273	6, 277
Cotton laces, machine-made						1, 647	1, 037	1, 096
Chemical wood pulp, 1,000 tons	68	61	82	52	2, 649	3, 796	5, 623	3, 660
Rags for paper stock, 1,000 lbs	44, 707	140, 769	122, 796	55, 459	777	3, 756	2, 385	1, 025
Standard newsprint paper, do	1, 437	51, 730	25, 769	13, 987	80	1, 606	767	438
Plate glass, unsilvered, 1,000 sq. ft	200	2, 441	5, 544	2, 116	52	1, 005	1, 842	588
China, decorated, 1,000 doz			2, 706	2, 927	3, 530	3, 584	3, 354	3, 549
Colors, dyes, stains, etc., 1,000 lbs		2, 932	2, 179	3, 238		3, 758	2, 323	3, 427
Potash, chloride, crude, 1,000 tons	204	108	117	97	6, 768	3, 523	3, 664	3, 349
Potash, sulphate, crude, do	43	59	64	60	1, 740	2, 277	2, 561	2, 560
Manure salts, do	[1] 169	259	201	175	[1] 1, 755	2, 369	2, 082	2, 289
Toys, including dolls					6, 918	3, 157	3, 301	3, 490
Works of art (100 years old)					1, 293	5, 697	3, 318	4, 122

[1] Year ended June 30, 1913.

HUNGARY

Although the United States statistics of trade with Hungary are too low because of indirect trade, the aggregate, according to Hungarian statistics, is also relatively small. According to our statistics, exports amounted to $1,800,000 and imports to $950,000 in 1927. The principal exports are cotton, phosphate rock, agricultural machinery, typewriters, and automobiles.

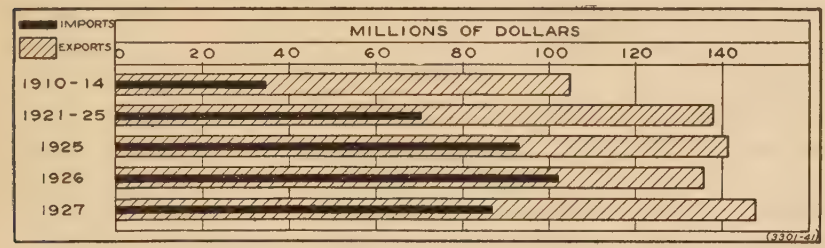
IRISH FREE STATE

Exports to the Irish Free State totaled $10,900,000 in 1927, which was 36 per cent less than in the preceding year, and imports amounted to $1,600,000. Exports of wheat were about 30 per cent less, the value being $4,798,000 in 1927.

NETHERLANDS

Netherlands is a gateway to Germany and central Europe, and owing to that fact our statistics somewhat exaggerate both export and import trade with that country. Shipments reported as destined to the Netherlands amounted to $148,300,000 in 1927, or 9 per cent more than in 1926, while imports credited to that country totaled $87,200,000, or 14 per cent less than the year before. Important

Chart XXVIII.—TRADE OF THE UNITED STATES WITH THE NETHERLANDS



gains appeared in exports of rye, wheat flour, cotton, copper, and passenger automobiles, while meat products, corn, and mineral oils fell off sharply. Imports of most of the leading commodities declined; diamonds, the largest item, showing a decrease of 21 per cent in value. There were substantial increases in both the quantity and value of our imports of creosote oil.

Table 49.—Principal Commodities in Trade of the United States with Netherlands

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**104, 575**	**141, 518**	**135, 795**	**148, 268**
Bacon, 1,000 lbs	4, 409	4, 976	4, 229	978	519	859	586	123
Oleo oil, do	[1] 46, 337	31, 945	27, 434	24, 538	[1] 5, 392	3, 958	3, 245	2, 904
Lard, do	36, 501	36, 944	48, 365	37, 764	4, 052	6, 074	7, 208	5, 035
Corn, grain, 1,000 bush	5, 111	719	2, 855	589	3, 178	741	2, 538	520
Rye, grain, do	503	3, 189	810	2, 088	201	4, 295	834	2, 649
Wheat, grain, do	8, 351	5, 993	14, 710	14, 013	8, 244	10, 607	21, 759	20, 533
Wheat flour, 1,000 bbls	819	907	1, 225	1, 538	4, 290	6, 620	8, 279	9, 910
Linseed cake, 1,000 lbs	280, 783	405, 354	417, 013	362, 900	4, 382	9, 082	8, 776	7, 778
Tobacco, leaf, do	25, 284	20, 803	29, 566	37, 483	2, 393	4, 868	5, 602	4, 395
Cotton, unmanufactured, 1,000 bales	24	149	124	135	1, 159	18, 748	11, 009	12, 478
Gasoline and naphtha, 1,000 bbls	223	902	1, 708	1, 674	855	5, 108	9, 843	7, 336
Illuminating oil, do	3, 088	1, 848	1, 762	1, 757	6, 222	4, 669	5, 625	4, 672
Copper (ingots, bars, rods), 1,000 lbs	[1] 161, 273	92, 593	64, 399	106, 716	[1] 26, 022	13, 363	9, 085	14, 809
Automobiles, passenger, number	[1] 111	2, 430	1, 666	2, 816	[1] 94	3, 061	1, 960	2, 746
Imports					**34, 937**	**92, 539**	**101, 855**	**87, 181**
Rubber, crude, 1,000 lbs	588	6, 843	5, 500	4, 327	399	5, 093	3, 352	1, 589
Bulbs, roots, and corms, thousands	[1] 213, 778	216, 335	193, 747	213, 370	[1] 1, 057	6, 691	5, 619	5, 367
Tobacco, leaf, wrapper, 1,000 lbs	6, 087	6, 261	6, 323	5, 664	7, 140	14, 745	14, 406	12, 100
Diamonds, cut, unset, 1,000 carats		252	267	223	9, 655	25, 264	27, 079	21, 317
Tin (bars, blocks, pigs), 1,000 lbs	2, 680	9, 263	16, 069	17, 372	1, 105	5, 265	10, 421	11, 405
Dead or creosote oil, 1,000 gals	2, 810	30, 325	23, 454	27, 976	169	3, 974	3, 159	4, 467

[1] Year ended June 30, 1913.

NORWAY

Both the export and the import trade with Norway declined in 1927, the former being valued at $23,400,000 and the latter at $22,200,000. (Tables 44 and 45.) Exports of meat products, rye, and mineral oils decreased in value in 1927. Wheat flour, tobacco, and passenger automobiles, on the other hand, were exported in much larger quantities. The values of leading imports in 1927 were as follows: Fish packed in oil, $4,070,000; newsprint, $909,000; whale oil, $2,123,000; aluminum metal, $1,864,000; cod and cod-liver oil, $1,597,000; ferromanganese and other alloys, $537,000; chemical wood pulp, $5,619,000.

SWEDEN

The value of our 1927 exports to Sweden was $44,600,000, about 9 per cent more than the year before, while imports totaled $47,900,000, a gain of 8.8 per cent. Statistics in the accompanying table indicate that cotton, refined mineral oils, automobile tires, and motor vehicles were largely responsible for the expansion in exports, and wood pulp and newsprint for the gain in imports.

Table 50.—Principal Commodities in the Trade of the United States with Sweden

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					10,033	42,465	40,854	44,613
Lard, 1,000 lbs.	530	2,468	1,901	1,046	56	418	300	142
Wheat, grain, 1,000 bush.	55	275	750	608	52	499	1,100	869
Wheat flour, 1,000 bbls.	43	63	52	80	230	470	378	554
Apples, fresh, do.	2	124	142	164	6	774	913	1,049
Prunes, 1,000 lbs.	1,896	4,648	5,994	6,861	153	446	486	436
Automobile tires (casings), number		55,671	40,822	80,936		961	806	1,196
Leaf tobacco, 1,000 lbs.	2,809	1,499	4,355	3,161	302	483	1,056	617
Cotton, unmanufactured, bales	34,624	54,906	54,687	58,218	2,243	28,821	5,074	5,259
Gasoline, naphtha, etc., 1,000 bbls.	31	479	698	1,233	154	3,093	4,095	5,589
Illuminating oil, do.	616	241	238	285	1,506	656	923	800
Lubricating oil, do.	46	106	91	89	244	1,263	1,113	1,154
Refined copper (ingots, bars), 1,000 lbs.	[1] 9,081	29,106	24,712	21,875	[1] 1,472	4,255	3,450	2,958
Automobiles, passenger, number	[1] 256	3,378	3,608	5,651	[1] 236	3,318	3,514	5,177
Motor trucks and busses, do.	[2] 1	271	368	840	[2] 1	278	376	681
Imports					9,530	41,033	44,018	47,891
Chemical wood pulp:								
Sulphite, 1,000 tons	90	265	304	346	3,154	1,560	18,780	20,607
Sulphate, unbleached, do.		148	159	176		8,359	9,720	10,262
Standard newsprint, million lbs.	1	131	92	135	19	3,946	2,749	3,858
Iron ore, 1,000 tons	291	149	54	244	1,557	557	215	912
Steel ingots, bars, rods, and bar iron, 1,000 lbs.	65,060	49,986	47,099	40,395	1,339	2,386	2,282	2,022
Flat wire and steel in strips, do.		2,605	2,794	2,329		1,520	1,446	1,128
Matches in boxes, 1,000 gross		3,245	3,554	3,661	327	1,231	1,298	1,357

[1] Year ended June 30, 1913. [2] Year ended June 30, 1914.

SWITZERLAND

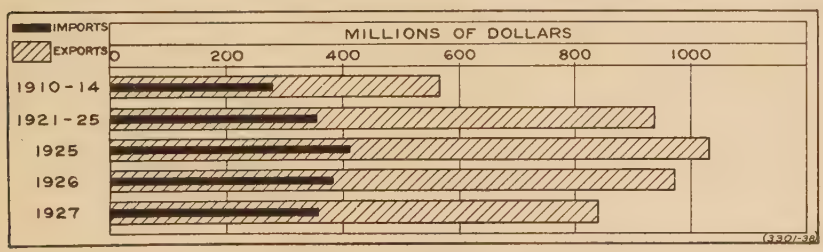
The direct shipments to Switzerland in 1927 amounted to $10,100,000, which was 23 per cent more than in 1926. Since all the trade with Switzerland has to pass through other countries and is often credited to them, its importance is greatly underestimated by our figures, particularly in the case of exports. The direct shipments recorded show gains for adding and calculating machines, typewriters, and passenger automobiles.

The imports reported as coming from Switzerland totaled, in 1927, $45,900,000, or about 9 per cent more than the year before. Imports of cheese increased from $5,218,000 to $5,938,000. Our purchases of cotton cloth, materials for hats, hats of straw, silk yarns, and silk fabrics were also greater in value in 1927 than in the preceding year.

UNITED KINGDOM

United States trade in both directions with the United Kingdom declined for the second consecutive year. Exports were 13.6 per cent less than in 1926 and amounted to $840,100,000. Smaller shipments of cotton at a lower average price were responsible for about one-half of the decline in value, and exports of pork products and refined mineral oils declined sharply in quantity and value. Noteworthy

Chart XXIX.—TRADE OF THE UNITED STATES WITH THE UNITED KINGDOM



increases appeared in sales of grain, tobacco, refined sugar, and automobiles.

Imports from the United Kingdom totaled $357,900,000 in 1927, a decrease of 6.6 per cent as compared with the previous year, which resulted partly from smaller quantities imported and partly from price declines. About 28 per cent more rubber was purchased in the United Kingdom, but the value was one-fifth less than in 1926. Imports of cotton cloth, burlaps, wool, tin, and platinum declined materially.

Table 51.—Principal Commodities in Trade of the United States with United Kingdom

[Values in thousands of dollars]

Commodity	Quantity				Value (thousands of dollars)			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**567,592**	**1,033,856**	**972,606**	**840,066**
Bacon, 1,000 lbs	133,760	94,677	80,947	42,480	17,202	19,634	17,524	7,866
Hams and shoulders, do	143,087	212,891	161,097	101,888	18,431	44,509	38,190	20,899
Lard, do	169,176	214,772	224,928	220,743	18,403	36,258	34,766	29,573
Furs, undressed, number		5,601	4,085	6,163	7,077	9,874	7,682	11,174
Barley, grain, 1,000 bush	5,054	10,753	8,183	11,705	3,300	10,218	6,380	11,994
Wheat, grain, do	21,806	17,100	37,897	42,580	20,463	29,405	55,215	60,694
Wheat flour, 1,000 bbls	2,713	1,210	1,439	1,438	13,753	8,742	9,498	9,347
Apples, fresh, 1,000 boxes	3,063	6,626	10,586	3,183	3,650	13,208	19,672	18,091
Canned fruits, 1,000 lbs		207,459	166,540	176,452	2,716	20,657	16,547	15,583
Sugar, refined, do	36,977	374,385	26,798	101,043	1,626	13,647	968	4,133
Tobacco, leaf, do	139,837	171,115	149,720	182,542	15,759	84,405	67,340	79,278
Cotton, unmanufactured, 1,000 bales	3,395	2,457	2,308	1,694	221,708	304,418	208,358	140,167
Boards, planks, etc, 1,000 bd. ft	259,153	296,280	257,260	318,584	9,505	19,593	17,764	20,070
Gasoline and naphtha, 1,000 bbls	592	8,237	14,694	13,691	2,207	45,060	83,815	63,089
Gas and fuel oil, do	[1] 3,009	4,405	5,709	5,507	[1] 3,707	7,194	9,272	8,283
Lubricating oil, do	1,382	2,092	2,201	2,025	6,490	17,548	17,026	15,534
Copper (ingots, bars, rods), 1000 lbs	[1] 106,995	218,007	200,054	205,541	[1] 17,139	31,741	28,498	28,692
Automobiles, passenger, number	[1] 3,795	17,569	5,826	11,185	[1] 2,907	16,218	4,821	8,868
Automobile parts					745	4,933	4,214	4,902
Imports					**278,897**	**412,705**	**383,198**	**357,930**
Furs, undressed					3,190	19,966	21,852	20,720
Tea, 1,000 lbs	11,620	24,771	19,865	19,922	3,180	9,334	8,173	8,267
Rubber, crude, do	28,737	84,730	57,522	73,788	27,511	47,951	33,536	26,743
Cotton cloth, 1,000 sq. yds	40,780	91,519	44,239	40,840	6,261	21,988	12,135	10,548
Burlaps, 1,000 lbs	59,868	55,829	54,319	50,910	5,049	9,256	8,513	7,103
Carpet wool, do	23,115	46,573	46,768	39,062	3,723	14,914	12,570	10,819
Combing wool, do	14,328	25,090	20,190	17,560	3,616	11,237	7,522	6,201
Wool fabrics, do		7,961	7,910	8,529	684	16,405	16,393	16,642
Manufactures of flax, hemp, ramie					17,400	26,106	23,539	23,789
Diamonds, uncut, 1,000 carats		108	145	146	6,957	6,377	8,884	8,117
Tin in bars, blocks, etc, 1,000 lbs	57,700	40,014	46,511	31,277	22,678	22,607	29,330	19,285
Platinum, oz. troy	18,500	62,607	55,417	41,136	634	7,247	6,078	3,560
Dead or creosote oil, 1,000 gals	33,388	36,550	38,983	38,279	1,996	4,693	5,053	6,231
Works of art (100 years old)					12,820	12,032	14,918	20,282

[1] Year ended June 30, 1913.

NORTHEASTERN EUROPE

Northeastern Europe is a region which includes Finland, the Baltic States, Russia, Poland, and Danzig. Much of the trade with both Russia and Poland passes through the Baltic States, Germany, and other countries. Consequently, the published figures do not accurately portray either the total trade or the changes from year to year. The total direct exports to northeastern Europe in 1927 amounted to $92,000,000, which was 37 per cent more than in 1926, while imports from that region totaled $30,900,000, a decrease of 12 per cent.

BALTIC STATES

Our reported exports to the Baltic States—Estonia, Latvia, and Lithuania—aggregated $2,170,000 in 1927 as compared with $1,600,000 in 1926, while imports amounted to $5,400,000 as com-

pared with $8,200,000. About four-fifths of the imports are from Latvia and include undressed furs, calfskins, flax, and platinum, which originate largely in Russia.

FINLAND

Recorded exports to Finland were $16,500,000 in 1927, which was a gain of 28 per cent as compared with 1926. Shipments of cotton totaled $1,191,000; wheat flour, $3,574,000; and passenger automobiles, $2,403,000, the gains in the case of cotton and automobiles being more than 100 per cent.

The value of imports was $8,700,000 as compared with $9,100,000 in 1926. Newsprint fell off about one-fifth in 1927 and totaled $1,678,000. Finland furnished us slightly more wood pulp (sulphite and kraft), but the total value was $4,501,000, 7 per cent less than in 1926.

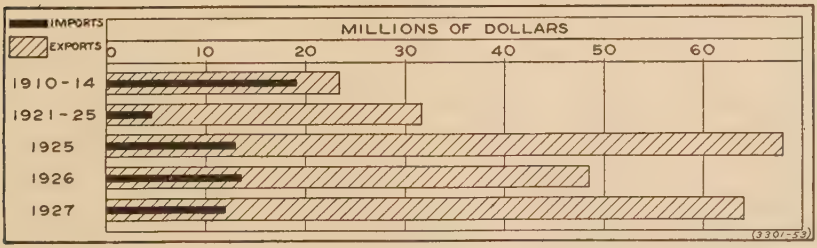
POLAND AND DANZIG

Direct exports to Poland and Danzig during 1927 were valued at $9,300,000, an increase of 135 per cent. Owing to indirect trade, particularly in cotton, through Germany, our statistics greatly underestimate the exports to Poland. Lard exports totaled $1,890,000, about twice as much as in 1926; leather, $1,459,000; and leaf tobacco, $849,000. Imports, of which furs and hides and skins constitute the chief items, gained 16.3 per cent, amounting to $4,800,000 in 1927.

SOVIET RUSSIA IN EUROPE

Exports to Soviet Russia in Europe have expanded rapidly in the years since the war, but the development has been somewhat irregular. There was a sharp upward movement in 1924 and 1925, a considerable

Chart XXX.—TRADE OF THE UNITED STATES WITH SOVIET RUSSIA IN EUROPE



recession in 1926, and another upswing in 1927, when the trade totaled $64,100,000. The value of shipments of cotton was $39,200,000, or $6,400,000 more than in 1926. Exports of agricultural machinery

declined from $6,513,000 to $5,110,000 in 1927 as a result of a decrease of one-half in the value of wheel tractors. Imports declined 11 per cent during 1927 to a value of $12,000,000. Purchases of undressed furs amounted to only $1,800,000, a reduction of 56 per cent.

SOUTHWESTERN EUROPE

The region designated as southwestern Europe includes Italy, Spain, Portugal, the Azores, the Madeira Islands, and Gibraltar. Exports to this region continued to decline during 1927, chiefly as a result of smaller shipments to Italy, and totaled $219,600,000. Imports were valued at $149,700,000 as compared with $151,100,000 in 1926; the change was due to a decline in purchases from Spain and Portugal which more than offset the increase in importations from Italy.

ITALY

Table 52.—Principal Commodities in Trade of the United States with Italy

[Values in thousands of dollars]

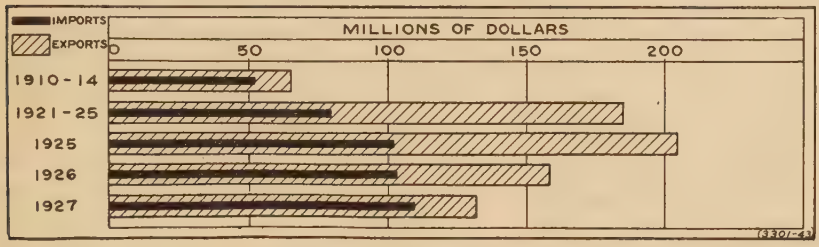
Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**65,966**	**205,150**	**157,402**	**131,650**
Bacon, 1,000 lbs.	7,561	6,901	757	2,679	837	1,044	106	331
Lard, do.	4,656	28,507	5,901	12,190	492	4,794	905	1,628
Wheat, grain, 1,000 bush.	2,367	14,360	8,401	11,833	2,411	26,394	12,293	16,275
Automobile tires (casings), number		5,746	4,460	43,863		68	84	520
Tobacco, leaf, 1,000 lbs.	41,690	11,263	5,814	3,262	5,147	2,877	1,383	648
Cotton, unmanufactured, 1,000 bales	482	727	816	670	31,293	91,493	76,594	60,647
Coal, bituminous, 1,000 tons	357	778	1,542	321	1,014	3,535	8,108	1,724
Gasoline and naphtha, 1,000 bbls.	162	1,052	1,033	983	658	6,742	6,127	4,239
Illuminating oil, do.	658	542	517	258	1,373	1,422	1,845	707
Gas and fuel oil, do.	[1] 206	1,139	279	182	[1] 310	1,989	472	337
Lubricating oil, do.	195	517	459	392	1,019	5,611	4,686	4,136
Paraffin wax, 1,000 lbs.	20,150	50,520	48,548	41,324	696	2,676	2,872	2,073
Copper (ingots, bars), do.	[1] 43,886	126,472	82,957	86,270	[1] 7,373	18,197	11,700	11,760
Automobiles, passenger, number	[1] 331	8,141	4,300	849	[1] 281	2,591	1,476	719
Imports					**51,149**	**102,205**	**102,526**	**108,907**
Cheese, 1,000 lbs.	20,835	33,829	35,026	31,938	3,950	8,576	10,348	12,176
Canned tomatoes and paste, do.		104,616	100,183	109,254		5,881	5,706	6,752
Lemons, do.	[2] 146,812	115,401	73,771	61,917	3,915	2,639	1,698	1,576
Almonds, do.	3,909	5,769	6,937	7,698	814	2,236	2,414	2,643
Filberts, do.	9,152	8,952	10,050	6,501	637	1,408	1,440	922
Walnuts, do.	5,755	10,389	13,009	4,835	504	1,608	2,064	634
Olive oil, edible, do.	24,699	61,984	55,402	47,110	4,264	10,551	9,882	11,245
Olive oil, inedible, do.	160	37,009	21,704	41,901	90	2,992	1,831	3,681
Tobacco, cigarette leaf, do.	1	10,312	10,764	17,570	[3]	6,227	4,369	7,214
Hats, bonnets, hoods of straw, etc., thousand		4,771	4,510	4,684	449	2,368	2,702	2,997
Silk, raw, 1,000 lbs.	2,605	1,929	1,137	543	10,007	12,121	6,480	2,716

[1] Year ended June 30, 1913. [2] Average for years 1910–1913. [3] Less than $500.

Exports to Italy showed a further decrease during 1927, falling 16 per cent below the 1926 value and amounting to $131,650,000. Marked declines appeared in exports of tobacco, cotton, coal, mineral oils,

and automobiles, but there were gains in pork products, wheat, and automobile tires. Imports from Italy were the largest ever recorded, reaching a value of $108,100,000 and exceeding those of 1926 by 6.2

Chart XXXI.—TRADE OF THE UNITED STATES WITH ITALY



per cent. The most noteworthy increases were in imports of cheese, olive oil, tobacco, and canned tomatoes. Imports of walnuts were about three-fifths and silk about one-half less than a year earlier.

PORTUGAL

United States exports to Portugal declined 8.3 per cent during 1927 to a value of $10,700,000 in consequence of a decrease of about two-fifths reduction in shipments of cotton. Exports of cotton totaled $2,688,000 in 1927; gasoline, $1,207,000; illuminating oil, $822,000; and passenger automobiles, $919,000. Imports were 18 per cent less than in the preceding year and the value in 1927 was $4,600,000. (Table 44.) Imports of cork and cork manufactures amounted to $2,257,000 in 1927, a decrease of 28 per cent.

SPAIN

Table 53.—Principal Commodities in the Trade of the United States with Spain

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					26,189	79,203	68,206	73,772
Leaf tobacco, 1,000 lbs	20,112	15,031	1,483	20,829	1,460	1,300	76	1,110
Cotton, unmanufactured, do	257	298	311	315	17,147	39,497	29,739	29,744
Boards, etc., southern pine, 1,000 bd. ft	[1] 29,437	30,587	29,530	32,787	[1] 635	1,242	1,199	1,353
Gasoline, naphtha, etc, 1,000 bbls	1	674	813	984	3	3,651	4,336	3,851
Lubricating oil, do	42	143	140	199	235	1,717	1,514	2,117
Refined copper (ingots, bars), do	[1] 45	7,078	9,657	3,770	[1] 7	1,011	1,384	518
Typewriters, number		10,896	12,686	16,879	111	593	688	873
Automobiles, passenger, do	[1] 186	6,384	5,056	7,515	[1] 128	6,309	5,013	7,709
Motor trucks and busses, do	[1] 1	1,374	2,227	3,203	[1] 1	644	1,180	1,699
Automobile parts					4	1,402	1,509	1,244
Imports					21,610	32,798	41,369	34,351
Sheep and lamb skins, 1,000 pieces		747	576	427	51	909	607	490
Goat and kid skins, do		1,527	1,811	909	211	1,771	2,224	1,298
Furs, undressed					5	1,520	1,175	1,125
Onions, 1,000 lbs	26,855	74,135	62,490	51,662	270	1,509	1,142	1,108
Olives, 1,000 galls	3,158	3,419	4,778	4,473	1,456	2,916	3,756	4,220
Almonds, 1,000 lbs	10,444	11,846	11,895	9,085	2,139	3,882	4,700	3,440
Olive oil, edible, do	2,193	15,547	16,966	18,895	282	2,789	2,944	4,296
Olive oil, inedible, do	[1] 2,786	4,323	23,952	2,163	[1] 183	487	2,495	412
Cork, and manufactures of					2,022	3,060	5,362	5,598
Copper ores (copper content), 1,000 lbs	[1] 5,894	8,898	13,480	8,464	[1] 862	1,067	1,677	1,027
Unrefined copper (pigs, bars), do	[1] 35,763	14,420	24,783		[1] 5,683	1,915	3,229	

[1] Year ended June 30, 1913.

The total value of exports to Spain was $73,800,000 in 1927, an increase of 8.2 per cent. Shipments of raw cotton, the largest commodity in the trade, totaled $29,700,000, which was practically the same as in 1926. Exports of passenger automobiles, the second largest item, were valued at $7,709,000, about 50 per cent more than in 1926. Exports of lead, tobacco, lubricating oil, typewriters, and motor trucks and busses also showed important gains. The value of exports of gasoline was less by reason of the reduced price and copper exports fell off considerably.

Imports from Spain decreased 17 per cent during 1927 and amounted to $34,400,000. Imports of unrefined copper, which was the most important item in the trade prior to the war, ceased entirely in 1927 and our purchases of copper ore in Spain were also reduced by more than one-third as compared with 1926. Imports of goat and kid skins were only about one-half as large as in the preceding year, and there was also a considerable reduction in almond imports.

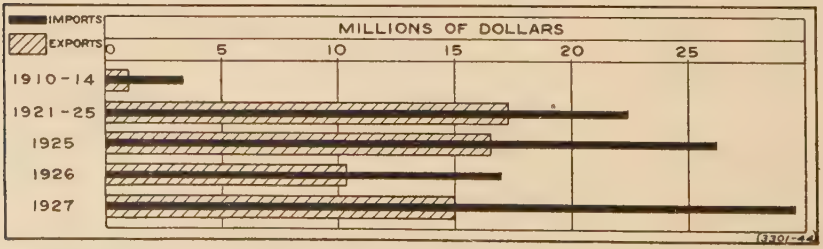
SOUTHEASTERN EUROPE

Southeastern Europe includes Bulgaria, Greece, Rumania, Turkey, Yugoslavia, and Albania. Most of these countries trade chiefly through the Mediterranean and there is a great deal of indirect trade. Comparisons with pre-war statistics are very unsatisfactory as a result of boundary changes. In 1927 our reported exports to southeastern Europe totaled $25,900,000, 41 per cent more than the year before, and the imports, $44,800,000, an increase of 51 per cent. Nearly three-fifths of the export trade and two-thirds of the import trade were credited to Greece. About one-fourth of the imports in 1927 represented consignments from Turkey and consisted largely of carpets, valued at $1,458,000, and tobacco (cigarette leaf), valued at $6,631,000.

GREECE

Exports of the United States to Greece increased 45 per cent in 1927 and reached a value of $15,000,000, while imports aggregated

Chart XXXII.—TRADE OF THE UNITED STATES WITH GREECE



$29,600,000, a gain of 75 per cent. Exports of wheat more than doubled, totaling $6,684,000, whereas oleo oil and wheat flour declined more than one-half in value, amounting to $255,000 and $829,000,

respectively. Imports of wool carpets amounted to $1,147,000, two and one-half times the 1926 value, and leaf tobacco (cigarette) totaled $23,118,000, more than twice as much as the year before.

TRADE WITH ASIA AND OCEANIA

From the standpoint of trade routes, volume, and commodity character, the trade with western Asia, commonly called the Near East, differs very distinctly from that with eastern and southern Asia and Oceania, which together are usually designated as the Far East. The statistics given for Oceania do not include trade with Hawaii, which is treated as domestic.

Exports to Asia declined slightly to a value of $559,700,000 in 1927. Gains were shown in trade with western and southern and southeastern Asia, while there was a decline in exports to eastern Asia. Shipments to Oceania amounted to $193,700,000, a decrease of 9 per cent. Imports from Asia fell off 10.3 per cent to a value of $1,256,900,000, which resulted in Asia's ranking second among the continents in supplying our imports. The decline was confined to southern and southeastern Asia and may be ascribed to the lower average price paid for rubber. Imports from Oceania were 20 per cent less than a year earlier and amounted to $54,500,000.

Table 54.—Trade with Asia and Oceania, by Commercial Regions and Countries

[Values in millions and tenths of millions of dollars]

Region and country	Exports					Imports				
	1910–1914	1921–1925	1925	1926	1927	1910–1914	1921–1925	1925	1926	1927
Asia (Groups 1, 2, and 3)	121.0	498.9	486.6	564.5	559.7	258.5	942.9	1,319.1	1,400.7	1,256.9
1. Western	2.6	8.0	7.1	6.1	7.5	13.6	21.3	29.0	26.2	26.9
Aden	1.3	1.1	.6	.5	.6	1.8	2.2	3.3	2.9	3.1
Iraq, Arabia, etc	------	.4	.7	1.0	1.0	------	2.5	5.0	4.1	4.4
Palestine and Syria	------	3.1	4.8	3.4	3.6	------	2.3	4.4	2.9	4.2
Persia	.1	1.0	.4	.8	1.6	1.4	4.8	7.2	8.4	7.5
Turkey in Asia	1.1	2.5	.6	.4	.6	10.4	9.4	9.0	7.9	7.7
2. Southern and southeastern Asia	40.6	119.1	135.2	166.8	184.7	119.8	425.0	715.4	815.2	657.9
British India	10.9	38.2	38.3	50.0	63.3	56.4	109.0	144.5	150.9	131.0
British Malaya	2.9	8.0	11.4	13.6	13.6	24.6	153.2	314.0	383.8	277.8
Ceylon	.4	1.5	2.4	2.9	2.7	10.0	27.1	48.2	55.8	40.8
Netherland East Indies	3.1	17.2	19.2	27.6	32.1	9.2	55.0	95.8	119.6	91.4
French Indo-China	.2	1.1	1.4	2.2	1.4	(1)	.2	.1	.2	.1
Philippine Islands	22.6	51.9	61.1	68.6	69.5	19.4	80.1	111.8	103.8	116.0
Siam	.5	1.2	1.4	1.9	1.9	.1	.3	.8	.6	.6
3. Eastern Asia	77.8	371.7	344.4	391.7	367.5	125.2	496.6	574.7	559.3	572.1
China	21.6	104.2	94.4	110.2	83.5	35.3	142.0	168.9	143.2	151.7
Hong Kong	9.1	17.8	14.3	12.8	18.9	3.1	15.9	17.8	11.3	14.8
Kwantung	.7	6.7	5.3	6.5	6.7	.1	2.7	3.5	3.5	2.7
Japan	45.3	241.9	229.6	260.8	257.6	85.0	335.4	384.2	400.7	402.1
Soviet Russia in Asia	1.1	1.1	.7	1.4	.8	1.7	.5	.3	.6	.9
4. Oceania	47.7	141.4	189.5	212.7	193.7	17.3	54.0	77.8	68.4	54.5
Australia	38.7	111.3	148.5	168.7	159.1	12.3	37.5	55.1	45.7	38.6
New Zealand	7.8	28.2	38.4	41.6	32.5	3.8	13.8	19.7	18.8	12.7
Other Oceania	1.2	2.0	2.6	2.4	2.1	1.2	2.6	3.0	3.8	3.2
Far East (Groups 2, 3, and 4)	166.2	632.2	669.0	771.1	745.9	262.2	975.6	1,368.0	1,442.8	1,284.5

[1] Less than $50,000.

Table 55.—Percentages of Distribution and Change in Trade with Asia and Oceania, by Commercial Regions and Countries

Region and country	Per cent of total exports			Per cent of total imports			Per cent change in 1927 exports from—			Per cent change in 1927 imports from—		
	1910–1914	1921–1925	1927	1910–1914	1921–1925	1927	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926
Asia (Groups 1, 2, and 3)	**5.6**	**11.3**	**11.5**	**15.3**	**27.3**	**30.0**	**+362.4**	**+12.2**	**−0.9**	**+386.2**	**+33.3**	**−10.3**
1. Western	**.1**	**.2**	**.2**	**.8**	**.6**	**.6**	**+187.7**	**−7.1**	**+22.2**	**+98.0**	**+26.3**	**+2.4**
2. Southern and southeastern	**1.9**	**2.7**	**3.8**	**7.1**	**12.3**	**15.7**	**+354.7**	**+55.0**	**+10.7**	**+449.4**	**+54.8**	**−19.3**
British India	.5	.9	1.2	3.3	3.2	3.1	+480.5	+65.8	+26.6	+132.5	+20.2	−13.2
British Malaya	.1	.2	.3	1.5	4.4	6.6	+373.8	+69.7	+.5	+1,028.1	+81.3	−27.6
Ceylon	(1)	(1)	.1	.6	.8	1.0	+547.5	+84.0	−6.4	+309.9	+51.0	−26.8
Netherland East Indies	.1	.4	.7	.5	1.6	2.2	+937.3	+86.4	+16.4	+894.0	+66.3	−23.6
Philippine Islands	1.0	1.2	1.4	1.2	2.3	2.8	+207.7	+33.9	+1.3	+496.9	+44.8	+11.7
3. Eastern	**3.6**	**8.5**	**7.6**	**7.4**	**14.4**	**13.7**	**+372.2**	**−1.1**	**−6.2**	**+356.9**	**+15.2**	**+2.3**
China	1.0	2.4	1.7	2.1	4.1	3.6	+287.0	−19.8	−24.2	+329.4	+6.8	+5.9
Hong Kong	.4	.4	.4	.2	.5	.4	+106.5	+5.9	+47.2	+384.1	−7.2	+30.9
Japan	2.1	5.5	5.3	5.0	9.7	9.6	+468.7	+6.5	−1.2	+373.1	+19.9	+.4
4. Oceania	**2.2**	**3.2**	**4.0**	**1.0**	**1.6**	**1.3**	**+306.0**	**+37.0**	**−8.9**	**+215.6**	**+1.0**	**−20.2**
Australia	1.8	2.5	3.3	.7	1.1	.9	+310.9	+43.0	−5.7	+213.7	+2.9	−15.5
New Zealand	.4	.6	.7	.2	.4	.3	+317.4	+15.3	−21.8	+237.2	−8.3	−32.7
Far East (Groups 2, 3, and 4)	**7.7**	**14.4**	**15.3**	**15.5**	**28.3**	**30.7**	**+348.9**	**+18.0**	**−3.3**	**+389.8**	**+31.7**	**−11.0**

[1] Less than one-tenth of 1 per cent.

WESTERN ASIA

Western Asia includes the Arabian Peninsula, Turkey in Asia, and Persia. Export trade to this region is small but the imports reach a considerable volume. Both exports and imports gained slightly in 1927, the former amounting to $7,500,000 and the latter to $26,900,000. Our chief imports from these countries are hides and skins, rugs, mohair, gums, licorice root, filberts, figs, raisins, and opium.

FAR EASTERN TRADE

Exports to the Far East amounted to $745,900,000, a decline of 3 per cent as compared with the previous year. This loss resulted from a recession in the trade with eastern Asia (principally China) and Oceania and was chiefly because of smaller sales of leaf tobacco and cigarettes in China, smaller shipments of automobiles to Australia and New Zealand, and the lower average value of gasoline.

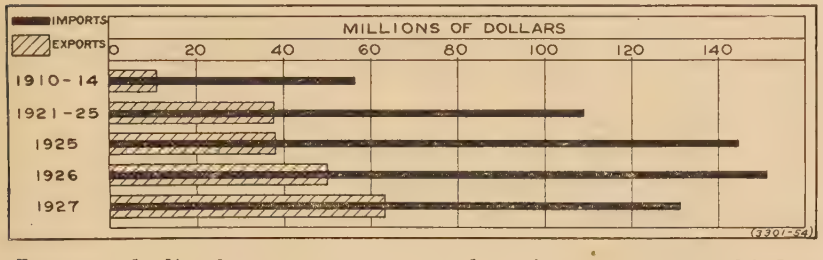
Imports showed a loss in value of 11 per cent and totaled $1,284,500,000, by reason of the lower aggregate value of rubber purchased in southern and southeastern Asia and the marked declines in the quantity and value of wool imported from Australia and New Zealand.

BRITISH INDIA

Exports to British India gained 27 per cent during 1927, reaching a value of $63,300,000. The trade is so highly varied that a large part of it is not listed in the following table. The most marked gain

appeared in shipments of cotton, which totaled $17,800,000 in 1927, more than three times the value in 1926. Copper, typewriters, and automotive products showed noteworthy increases, while exports of kerosene and iron and steel plates and sheets fell off considerably.

Chart XXXIII.—TRADE OF THE UNITED STATES WITH BRITISH INDIA



Imports declined 13 per cent to a value of $131,000,000, chiefly as a result of lower prices of jute and jute products, which constitute about one-half of the total trade. Imports of tea, castor beans, carpet wool, and carpeting were substantially larger than in 1926.

Table 56.—Principal Commodities in the Trade of the United States with British India

[Values in thousands of dollars]

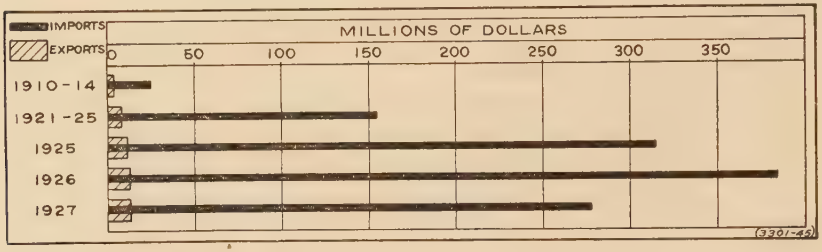
Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					10,904	38,282	50,013	63,297
Leaf tobacco, 1,000 lbs	179	4,762	4,940	3,835	28	1,122	1,312	1,079
Cotton, unmanufactured, 1,000 bales	18	1	61	262	969	53	5,672	17,764
Illuminating oil, 1,000 bbls	1,006	1,505	1,748	1,361	2,651	3,976	5,764	3,949
Lubricating oil, do	192	408	378	414	954	3,362	3,291	3,808
Iron and steel sheets, galvanized, 1,000 lbs	[1] 5,952	18,451	28,525	13,731	[1] 161	794	1,294	713
Tinplate, terneplate, etc, do	487	21,216	32,687	19,984	163	1,094	1,670	982
Tubular products and fittings, do	13,668	12,967	13,288	20,831	385	719	695	1,031
Aluminum and manufactures of					90	851	1,049	1,245
Refined copper (ingots, bars), 1,000 lbs		3,645	4,415	5,994		580	620	809
Construction and conveying machinery						788	493	758
Oil-well machinery, 1,000 lbs		4,515	3,145	5,091		758	669	993
Typewriters, number		10,248	11,519	15,864	187	517	627	814
Motor trucks and busses, do	[2] 7	1,121	1,456	1,913	[2] 12	894	1,158	1,453
Automobiles, passenger, do	[1] 439	2,669	2,530	3,531	[1] 356	2,281	2,210	2,987
Automobile parts and accessories					20	693	995	1,441
Medicinal and pharmaceutical preparations					263	897	973	1,189
Lamps and illuminating devices, except electric					330	1,243	978	661
Imports					56,356	144,503	150,930	131,002
Goat and kid skins, 1,000 pieces		16,667	19,640	18,758	8,034	11,091	14,100	13,916
Castor beans, 1,000 lbs	563	84,378	90,353	109,251	618	3,789	3,060	3,845
Tea, do	2,265	5,137	6,530	8,776	377	1,827	2,297	2,884
Rubber, crude, do	25	3,974	4,626	1,018	25	1,846	2,615	483
Shellac, do	20,041	18,468	30,352	21,639	2,777	9,472	10,218	8,768
Other varnish gums, and resins, do		5,153	10,264	10,458	114	2,044	2,723	3,563
Cotton, unmanufactured, do	2,533	14,105	10,946	11,968	278	2,995	1,894	1,614
Jute and jute butts, unmanufactured, tons	89,248	63,562	66,112	91,163	6,808	12,101	14,275	11,969
Jute burlaps, million lbs	359	549	525	490	24,084	72,744	70,734	56,783
Jute bagging for cotton, gunny cloth, etc					169	3,092	5,564	4,038
Jute bags or sacks, 1,000 lbs		46,033	46,410	36,654	2,848	5,707	5,846	3,796
Carpet wool, do	3,853	8,330	5,512	9,294	500	2,726	1,580	2,591
Carpets and carpeting, 1,000 sq. yds	34	251	214	307	93	1,361	1,459	1,694
Mica, 1,000 lbs		2,975	5,208	2,043	225	1,148	1,681	869
Pig iron, 1,000 tons	1	184	83	67	10	3,021	1,421	1,002

[1] Year ended June 30, 1913. [2] Year ended June 30, 1914.

BRITISH MALAYA

United States exports to British Malaya, which are quite varied in character, totaled $13,600,000, or about the same value as in the preceding year. The leading commodities—cigarettes, sardines, and

Chart XXXIV.—TRADE OF THE UNITED STATES WITH BRITISH MALAYA



automotive products—each amounted to more than $1,000,000 in value.

Imports from British Malaya were 6.6 per cent of our total incoming trade in 1927, amounting to $277,800,000. Rubber and tin, the two most important commodities, were valued at $203,800,000 and $64,000,000, respectively. The quantity of rubber imports was 1 per cent less in 1927 than in 1926, but the value registered a decrease of 35 per cent, indicating the marked decline in average price. Tin imports increased about one-seventh, while copra fell off one-half to a value of $2,600,000.

CEYLON

United States exports to Ceylon are relatively small and comprise a varied list of commodities, the most important being automotive products. In 1927 the export trade aggregated $2,700,000, a decline of 6.4 per cent. Imports amounted to $40,800,000, a decrease of 27 per cent, which resulted almost entirely from the lower price of rubber. The quantity of rubber purchased was 4 per cent greater, but the value declined 32 per cent to a value of $30,600,000. Coconut meat gained one-fourth in value and totaled $2,139,000. Imports of tea declined 15 per cent to a value of $5,796,000.

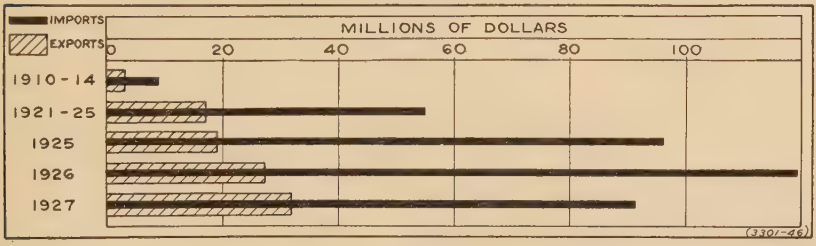
NETHERLAND EAST INDIES

Exports from the United States to the Netherland East Indies were valued at $32,100,000 in 1927, an increase of 16 per cent. Shipments of passenger automobiles were more than double those of the previous year, amounting to $4,969,000. Sulphate of ammonia, the second largest export commodity, fell off 21 per cent to a value of $2,724,000. Refined mineral oils amounted to $2,354,000, a loss of 28 per cent.

Imports totaled $91,400,000 as compared with $119,600,000 in 1926. A considerable part of the decline was the result of price

changes. Rubber increased 8 per cent in quantity but declined 28 per cent in value. Coffee and kapok also showed marked gains in quantity but were lower in value. Noteworthy declines appeared in both quantity and value of imports of goat and kid skins and of tea,

Chart XXXV.—TRADE OF THE UNITED STATES WITH THE NETHERLAND EAST INDIES

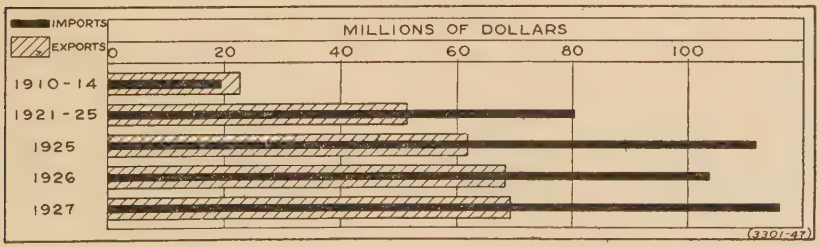


while imports of tin were only 15 per cent as large as in 1926. The values of the leading commodities in 1927 were as follows: Goat and kid skins, $1,767,000; rubber, $62,817,000; tea, $1,993,000; kapok, $4,057,000; coffee, $3,380,000; tin, $373,000.

PHILIPPINE ISLANDS

The Philippine Islands are treated as a foreign country in United States statistics of trade, and the figures in Table 57 represents the trade of the United States customs area (continental United States, Alaska, Hawaii, and Porto Rico) with the Philippine Islands. Exports to the islands were slightly larger in 1927, reaching a value of $69,500,000.

Chart XXXVI.—TRADE OF THE UNITED STATES WITH THE PHILIPPINE ISLANDS



In the last two fiscal years the United States furnished three-fifths of the merchandise imported by the Philippine Islands. In 1927 there appeared among the leading export commodities listed in the following table a greater number of losses than gains, which indicates that the smaller commodities in the trade gained considerably in value.

Imports gained 12 per cent to a value of $116,000,000 in 1927 in consequence of greater purchases of sugar, which increased about

three-fifths to a value of $47,600,000. The various coconut products and mahogany were greater in value, while, on the other hand, cigars and cheroots, cotton wearing apparel, and manila fell off considerably.

Table 57.—Principal Commodities in Trade of the United States with Philippine Islands

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					22,596	61,061	68,648	69,521
Canned salmon, 1,000 lbs.	5,750	7,534	8,141	4,742	380	710	825	500
Milk, condensed and evaporated, 1,000 lbs.	2,282	19,015	19,645	20,290	176	2,592	2,581	2,608
Wheat flour, 1,000 bbls.	279	564	610	635	1,126	4,148	4,137	3,882
Automobile tires (casings), number		71,921	58,074	112,166		751	834	1,394
Cigarettes, million	4	395	485	531	27	1,162	1,120	1,129
Cotton cloth, 1,000 sq. yds.[1]	66,387	79,239	100,578	87,384	4,187	11,322	13,180	11,155
Illuminating oil, 1,000 bbls.	256	341	281	197	929	2,172	1,824	1,313
Gasoline and naphtha, do.	22	125	334	293	157	1,119	2,843	2,287
Gas and fuel oil, do.	(2, 3)	931	723	686	[2] 1	1,307	733	743
Iron and steel sheets, galvanized, 1,000 lbs.	[2] 16,178	41,223	52,332	42,468	[2] 522	1,944	2,664	2,028
Sewing machines, number		26,805	17,216	31,666	260	768	454	889
Automobiles, passenger, do.	[2] 517	3,173	4,546	3,422	[2] 577	2,238	3,080	2,650
Books and pamphlets						1,092	1,025	1,244
Imports					19,430	111,820	103,797	115,984
Coconut meat, prepared, 1,000 lbs.		24,509	28,864	33,994		2,383	2,683	3,041
Copra, not prepared, do.	26,159	284,059	275,696	341,479	1,183	13,999	14,037	15,113
Coconut oil, do.	4,088	232,499	245,129	293,370	372	19,650	22,088	22,900
Sugar, cane, do.	232,340	985,549	760,871	1,061,030	5,827	42,130	29,606	47,598
Cigars and cheroots, do.	1,030	3,226	3,021	2,645	1,517	5,133	5,047	4,142
Cotton wearing apparel					5	3,959	5,422	3,521
Manila, 1,000 tons	71	62	69	51	9,736	18,091	18,213	13,075
Hats, bonnets, hoods of straw, etc., thousand		644	743	365	225	1,465	1,483	852
Mahogany, sawed, 1,000 bd. ft.	[2] 558	25,079	26,347	32,931	[2] 36	1,350	1,225	1,634

[1] Stated in linear yards for years 1910–1914. [2] Year ended June 30, 1913. [3] Less than 500 barrels.

INDO-CHINA AND SIAM

Statistics of direct trade between the United States and Indo-China and Siam somewhat understate the true facts because considerable trade passes through Singapore, Hong Kong, and other entrepôt markets and is credited to them in our statistics. Both exports and imports in 1927 were smaller than in 1926. (Table 54.) Mineral oil, machinery, and cigarettes were the principal items in export trade.

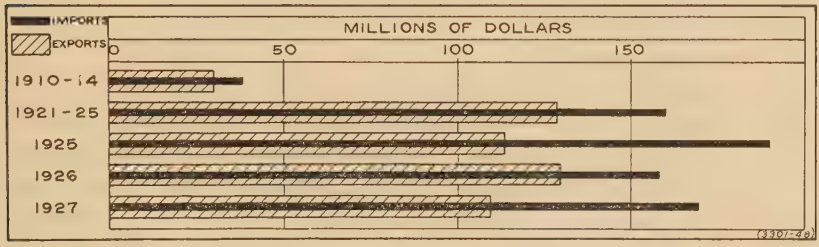
CHINA (INCLUDING HONG KONG AND KWANTUNG)

Disturbed political and economic conditions have been responsible in large measure for rather wide fluctuations in both export and import trade with China in recent years. Exports to China (including Hong Kong and Kwantung) declined from $129,500,000 in 1926 to $109,100,000 in 1927 in consequence of smaller movements of leaf

tobacco, cigarettes, and kerosene. On the other hand, shipments of cotton, wheat flour, and gasoline showed noteworthy gains.

Imports increased 7 per cent in 1927, amounting to $169,100,000. Important gains appeared in purchases of undressed furs, carpet

Chart XXXVII.—TRADE OF THE UNITED STATES WITH CHINA, HONG KONG, AND KWANTUNG



wool, cotton, Chinese wood oil, and plates and mats of dog and goat skins. Raw silk imports, which constituted nearly one-third of the trade, gained 10 per cent in quantity and 3 per cent in value.

Table 58.—Principal Commodities in Trade of the United States with China, Including Hong Kong and Kwantung

[Values in thousands of dollars]

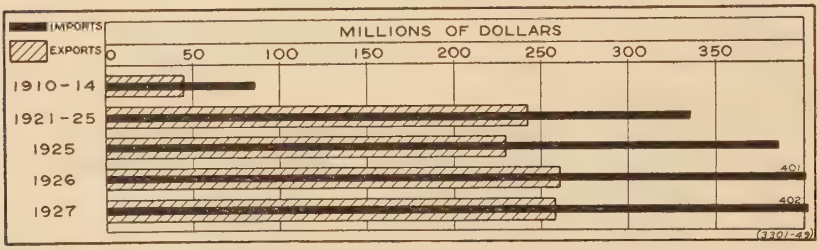
Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					31,391	114,015	129,490	109,075
Milk, condensed and evaporated, 1,000 lbs.	972	8,558	10,714	9,523	80	1,275	1,652	1,446
Wheat, grain, 1,000 bush.	18	391	795	303	15	662	1,091	390
Wheat flour, 1,000 bbls.	1,417	899	1,107	1,510	5,589	6,034	6,857	8,705
Tobacco, leaf, 1,000 lbs.	7,770	84,963	86,442	51,840	1,192	19,565	20,668	9,431
Cigarettes, million	654	5,398	6,897	4,418	992	9,305	12,114	7,733
Cotton, unmanufactured, 1,000 bales	14	56	172	243	810	6,496	13,321	19,077
Boards, etc., Douglas fir, 1,000 bd. ft.	[1] 96,270	97,909	140,322	86,249	[1] 1,068	1,928	2,679	1,537
Gasoline, naphtha, etc., 1,000 bbls.	6	334	211	377	34	2,123	1,804	2,582
Illuminating oil (kerosene), do.	2,400	3,981	3,071	2,563	7,202	21,289	17,969	14,649
Lubricating oil, do.	44	150	169	200	290	1,724	1,655	1,861
Copper (ingots, bars), 1,000 lbs.	[2] 3,255	13,116	9,136	6,726	[2] 461	1,885	1,278	864
Tin plate, terneplate, etc., do.	12,986	47,299	56,266	50,411	441	2,362	2,812	2,463
Colors, dyes, stains (coal tar), do.		18,304	15,174	17,799		3,300	1,913	1,884
Automobiles, passenger, number	[1] 96	1,752	2,208	1,246	[1] 97	1,335	1,510	910
Imports					38,475	190,255	157,963	169,149
Goat and kid skins, 1,000 pieces		5,845	8,217	6,699	2,613	4,333	6,092	4,922
Furs, undressed					133	15,557	15,164	22,906
Plates and mats of dog and goat skins, thousand		1,921	825	1,799		5,766	1,896	4,573
Bristles, sorted, bunched, etc., 1,000 lbs.	1,569	3,162	3,863	3,894	910	4,942	4,684	4,305
Chinese wood oil, 1,000 galls.	[1] 5,903	100,910	82,795	87,813	[1] 2,684	11,303	9,129	11,554
Tea, 1,000 lbs.	23,439	12,719	13,259	10,779	2,976	2,791	3,295	2,614
Cotton, unmanufactured, do.	8,156	18,705	10,931	22,558	925	4,379	2,275	3,819
Cotton laces, handmade					[3]	1,461	808	1,147
Materials for hats, of straw, etc., 1,000 yards		232,021	480,640	191,453	1,299	786	1,106	522
Carpet wool, 1,000 lbs.	32,806	64,233	22,871	48,275	4,068	17,713	5,906	11,327
Carpets, 1,000 sq. yds.	6	685	672	544	28	5,410	5,490	4,043
Silk, raw, 1,000 lbs.	5,145	11,211	10,535	11,555	12,878	60,227	51,344	53,055

[1] Year ended June 30, 1913. [2] Year ended June 30, 1914. [3] Less than $500.

JAPAN

The value of 1927 exports to Japan was $257,600,000, about 1 per cent less than the year before. American cotton shipments to Japan in 1927 attained the largest volume ever reported, with an increase

Chart XXXVIII.—TRADE OF THE UNITED STATES WITH JAPAN



in value of 14 per cent to a total of $122,900,000. Gas and fuel oil, tin plate and terneplate, and automotive products also showed noteworthy gains as compared with other recent years. On the other hand, the value of wheat declined more than one-half; gasoline, one-fourth; and kerosene, copper, and electrical machinery and apparatus, approximately two-fifths.

Table 59.—Principal Commodities in Trade of the United States with Japan

[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					45, 290	229, 642	260, 754	257, 582
Wheat, grain 1,000 bush	2, 338	3, 673	8, 006	4, 105	1, 994	5, 441	11, 040	5, 339
Tobacco, leaf 1,000 lbs	2, 997	7, 793	7, 233	9, 996	440	3, 299	2, 379	4, 290
Cotton, unmanufactured 1,000 bales	283	1, 003	1, 251	1, 437	18, 548	120, 888	107, 860	122, 922
Boards, etc., Douglas fir 1,000 bd. ft	[1] 14, 312	148, 173	176, 798	178, 554	[1] 197	3, 153	3, 760	3, 550
Boards, etc., hemlock do		102, 679	145, 922	165, 496		2, 188	3, 146	3, 323
Gasoline and naphtha 1,000 bbls	11	235	493	356	68	2, 355	3, 802	2, 789
Illuminating oil do	239	1, 490	2, 441	1, 533	4, 659	8, 580	13, 690	7, 437
Gas and fuel oil do		1, 585	2, 149	4, 419		2, 220	2, 214	4, 032
Lubricating oil do	75	192	202	2	553	2, 367	2, 413	2, 920
Iron or steel sheets, galvanized 1,000 lbs	[1] 12, 984	8, 922	12, 450	8, 120	[1] 393	353	477	312
Steel sheets, black do		83, 960	198, 906	138, 544		3, 107	6, 983	4, 891
Tin and terneplates do	2, 858	86, 857	109, 903	122, 493	100	4, 356	5, 629	6, 538
Copper (ingots, bars) do		8, 494	37, 344	24, 475		1, 181	5, 279	3, 198
Electrical machinery and apparatus					[1] 2, 415	10, 127	10, 719	6, 525
Automobiles, passenger number	[1] 312	1, 111	1, 642	2, 715	[1] 365	1, 156	1, 600	2, 316
Automobile parts					28	1, 673	2, 648	5, 905
Sulphate of ammonia 1,000 tons		52	67	31		2, 968	3, 590	1, 467
Imports					84, 999	384, 156	400, 693	402, 105
Crab meat 1,000 lbs	[1] 2, 811	9, 035	7, 916	8, 700	[1] 446	3, 051	3, 679	3, 703
Tea do	46, 245	29, 582	28, 292	26, 403	7, 957	6, 456	6, 898	5, 890
Materials for hats, bonnets of straw, etc 1,000 yds		545, 384	692, 611	726, 941	2, 077	1, 530	1, 927	1, 823
Silk, raw 1,000 lbs	15, 592	49, 685	53, 793	61, 797	52, 641	317, 753	328, 903	334, 160
Silk fabrics do		1, 646	2, 248	1, 982	2, 172	7, 638	10, 029	7, 856
Decorated china 1,000 doz			5, 089	4, 973	1, 236	2, 940	4, 388	3, 662

[1] Year ended June 30, 1913.

Imports from Japan have grown steadily during the last three years and in 1927 amounted to $402,100,000. Most of this gain has resulted from our larger purchases of raw silk. Other leading imports shown in the accompanying table declined in value in 1927.

AUSTRALIA

Table 60.—Principal Commodities in Trade of the United States with Australia

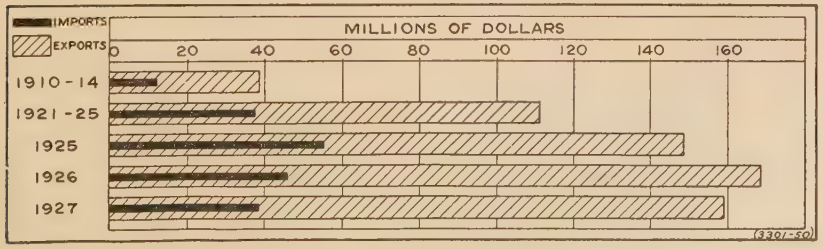
[Values in thousands of dollars]

Commodity	Quantity				Value			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Exports					**38,722**	**148,524**	**168,695**	**159,126**
Canned salmon, 1,000 lbs.	5,790	6,966	6,371	3,561	685	1,491	1,300	710
Automobile tires (casings), number		76,861	46,668	87,575		1,253	1,185	1,368
Tobacco, leaf, 1,000 lbs.	13,965	22,577	23,356	19,812	2,180	8,333	8,895	7,278
Timber, sawed, Douglas fir, 1,000 bd. ft.		65,648	113,082	162,261		1,443	2,391	3,386
Boards, etc.:								
Douglas fir, do.	[1] 188,550	107,170	87,825	90,417	[1] 2,291	2,558	2,039	2,134
Redwood, do.	[1] 46,739	38,856	32,802	43,372	[1] 1,213	2,858	1,911	2,605
Gasoline and naphtha, 1,000 bbls.	133	1,541	1,944	2,470	967	16,428	16,929	14,625
Illuminating oil, do.	543	571	571	600	2,447	3,723	4,039	4,070
Lubricating oil, do.	98	271	359	385	613	3,673	5,019	5,244
Electrical machinery and apparatus					1,115	5,104	7,603	6,842
Typewriters, number		11,829	13,832	13,313	381	682	808	763
Wheel tractors, do.		3,915	4,662	4,037		2,552	2,840	2,547
Automobiles, passenger, do.	[1] 2,083	48,357	48,954	40,954	[1] 1,897	34,336	33,986	26,686
Automobiles, motor trucks, do.	[1] 17	7,574	15,156	24,407	[1] 23	5,954	10,343	14,361
Parts of automobiles					109	2,703	3,116	3,827
Motor cycles, number	[1] 24	4,666	5,426	2,846	[1] 5	1,065	1,158	638
Railway cars and parts					88	1,613	724	143
Pianos, players and others, number	472	8,811	11,540	9,638	78	2,359	3,019	2,542
Imports					**12,312**	**55,110**	**45,738**	**38,627**
Sheep and lamb skins, 1,000 pieces		941	669	640	243	1,044	555	479
Furs, undressed					650	10,657	11,829	10,972
Mother-of-pearl, unmanufactured, 1,000 lbs.		2,465	2,763	3,211	453	1,001	1,153	1,024
Clothing wool, do.	17,221	3,030	3,726	4,439	4,370	1,528	1,657	1,887
Combing wool, do.	47	52,624	47,462	34,950	8	34,391	22,889	16,964

[1] Year ended June 30, 1913.

United States exports to Australia in 1927 declined 5.7 per cent from the high record attained in 1926 and amounted to $159,100,000. Although passenger automobiles showed a loss of 22 per cent and

Chart XXXIX.—TRADE OF THE UNITED STATES WITH AUSTRALIA



totaled only $26,700,000, Australia remained our leading motor-vehicle market. The aggregate value of gasoline exports was less in 1927, in spite of increased shipments, while exports of canned

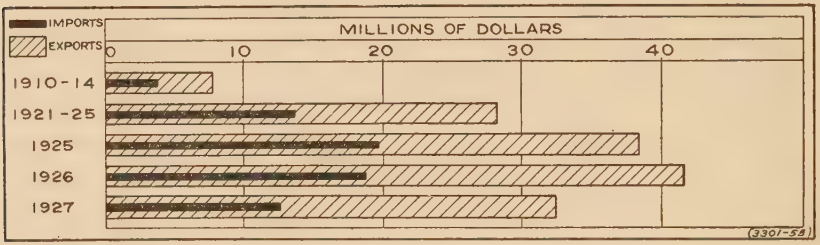
salmon, tobacco, electrical machinery and apparatus, motor cycles, and railway cars and parts fell off considerably. Marked gains appeared in sales of motor trucks and busses and lumber.

There was a further decline of 16 per cent in imports to a value of $38,600,000, largely as a result of smaller purchases of wool.

NEW ZEALAND

Exports to New Zealand were 22 per cent less in 1927 than in 1926 and amounted to $32,500,000. (See Tables 54 and 55.) Sales of

Chart XL.—TRADE OF THE UNITED STATES WITH NEW ZEALAND



motor vehicles were about 45 per cent less than in 1926 and aggregated $4,893,000, while gasoline decreased one-fourth in value and amounted to $7,100,000. Raisins, prunes, rubber manufactures, and "other refined mineral oils" also decreased in value.

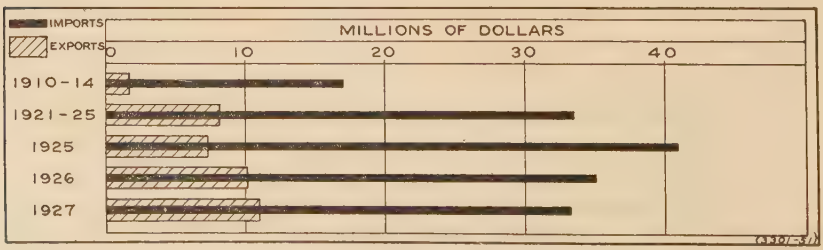
Imports totaled $12,700,000, which was one-third less than in 1926. Purchases of combing wool were only a little more than one-fourth as large as a year earlier and imports of sheep and lambskins were one-fifth smaller.

TRADE WITH AFRICA

MEDITERRANEAN AFRICA

Exports to Mediterranean Africa reached an aggregate of $25,300,000 in 1927, an increase of 6 per cent, which resulted from larger shipments to all countries except the Canary Islands. Much the

Chart XLI.—TRADE OF THE UNITED STATES WITH EGYPT



greater part of this trade is with Egypt, while Algeria and Tunisia rank second in importance. American wheat flour and refined mineral oils sold in Egypt declined considerably in value in 1927,

while passenger automobiles were three and one-half times greater The values of exports to Egypt of these commodities in 1927 were as follows: Wheat flour, $1,462,000; refined mineral oils, $965,000; passenger automobiles, $2,189,000. Gasoline shipments to French Africa amounted to $3,402,000 in 1927, a considerable gain as compared with 1926.

Imports totaled $39,300,000 in 1927, about the same value as in 1926. Egypt furnished $33,300,000 of this amount, which was a decrease from a year earlier, while the share of Algeria and Tunisia was larger. Imports of Egyptian cotton were 11 per cent greater in quantity but 7 per cent less in value, amounting to $30,000,000. Cork, iron ore, and olive oil are the principal imports from French Africa.

Table 61.—Trade with Africa, by Commercial Regions and Countries

[Values in millions and tenths of millions of dollars. Several minor countries are not shown separately but are included in the totals]

Region and country	Exports					Imports				
	1910–1914	1921–1925	1925	1926	1927	1910–1914	1921–1925	1925	1926	1927
Africa, total	**24.6**	**69.7**	**89.1**	**101.3**	**107.3**	**22.6**	**71.5**	**92.1**	**96.4**	**93.3**
Mediterranean	4.9	20.8	18.2	23.9	25.3	18.1	36.2	45.0	39.4	39.3
Algeria and Tunisia	[1] 2.4	7.3	5.7	6.7	7.1	[1].7	2.1	2.9	3.2	4.7
Egypt	1.7	8.2	7.4	10.2	11.2	16.9	33.5	41.0	35.2	33.3
Morocco	.1	2.4	2.4	2.3	3.2	.2	.4	.7	.5	.7
Spanish Africa: Canary Islands	.8	2.1	2.0	3.8	2.3	.1	.2	.3	.5	.7
Other Africa	19.7	48.9	70.9	77.4	82.0	4.5	35.3	47.1	57.0	53.9
Belgian Congo	[2]	.5	.8	1.2	.7	[2]	.9	1.8	1.7	15.6
British Africa—										
West	3.2	7.8	10.7	9.9	13.8	.7	12.8	17.4	19.8	23.9
South	12.9	31.4	46.2	51.1	52.5	2.5	9.3	9.2	19.8	8.7
East	.7	2.3	3.8	4.0	4.8	.9	1.8	3.3	2.3	1.6
Madagascar	[2]	.1	.2	.3	.4	[2]	.2	.5	.3	.1
Other French Africa	[1]	[3] 2.4	3.3	4.1	2.9	[1]	[3].8	1.3	1.2	1.6
Portuguese Africa	2.8	4.7	5.6	6.5	6.0	.3	9.6	13.5	11.7	1.9

[1] Algeria and Tunisia include other French Africa.
[2] Less than $50,000.
[3] 4-year average, 1922–1925.

Table 62.—Percentages of Distribution and Change in Trade with Africa, by Commercial Regions and Countries

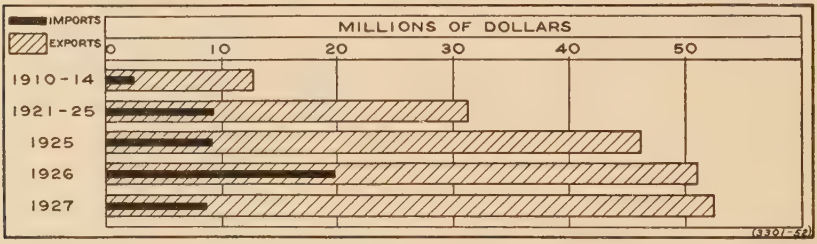
Region and country	Per cent of total exports			Per cent of total imports			Per cent change in 1927 exports from—			Per cent change in 1927 imports from—		
	1910–1914	1921–1925	1927	1910–1914	1921–1925	1927	1910–1914	1921–1925	1926	1910–1914	1921–1925	1926
Africa, total	**1.1**	**1.6**	**2.2**	**1.3**	**2.1**	**2.2**	**+335.6**	**+53.9**	**+6.0**	**+313 1**	**+30.4**	**−3.3**
Mediterranean												
Africa	.2	.5	.5	1.1	1.1	.9	+415.4	+21.6	+6.1	+117.4	+8.6	−.1
Algeria and Tunisia	.1	.2	.1	[1]	.1	.1	+200.5	−3.4	+6.2	+534.4	+121.9	+47.4
Egypt	.1	[1]	.2	1.0	1.0	.8	+562.4	+36.0	+9.1	+97.1	−.5	−5.5
Other Africa	.9	1.1	1.7	.3	1.0	1.3	+315.7	+67.7	+5.9	+1, 104.3	+52.9	−5.5
British West	.1	.2	.3	[1]	.4	.6	+332.0	+75.8	+39.0	+3, 096.9	+86.4	+21.5
British South	.6	.7	1.1	.1	.3	.2	+306.6	+67.3	+2.8	+254.9	−5.9	−50.9

[1] Less than one-tenth of 1 per cent.

AFRICA OTHER THAN MEDITERRANEAN

In spite of the immense area of Africa outside of the Mediterranean region, trade is relatively small, as the land is for the most part thinly populated by races little advanced in productive capacity and requirements. The trade, however, has been expanding rapidly for a number of years, and exports reached a record volume in 1927, increasing 6 per cent as compared with 1926 and amounting to $82,000,000. Almost two-thirds of this trade was with British South Africa. (See Table 61.) Principal exports to British South Africa in 1927 were as follows: Cotton cloth, $2,569,000; refined mineral oils, $7,316,000; passenger automobiles, $12,900,000; agricultural machinery and implements, $3,038,000; and electrical equipment, $1,558,000. Exports to British West Africa amounted to $13,800,000 in 1927, an increase of 39 per cent. Shipments of gasoline to that country were valued at $2,330,000 in 1927.

Chart XLII.—TRADE OF THE UNITED STATES WITH BRITISH SOUTH AFRICA



Imports fell off during 1927, amounting to $53,900,000. Very pronounced decreases appeared in the trade with British South Africa and Portuguese Africa and increases with the Belgian Congo (see Table 61), owing to large direct shipments of copper being made from the Belgian Congo rather than through South African ports. The value of imports of cocoa from British West Africa increased one-third in 1927, to $17,100,000, notwithstanding a decline of 7 per cent in the quantity imported. The values of other leading imports from Africa other than Mediterranean in 1927 were as follows: Wool and mohair, $2,570,000; cocoa or cacao beans, $17,277,000; palm oil, $8,044,000; and copper, $14,227,000.

AGRICULTURAL PRODUCTS AND FOODSTUFFS

AGRICULTURAL PRODUCTS IN GENERAL

SUMMARY.—The total acreage planted to crops was slightly smaller in 1927 than in 1926 but was larger than in any other year since 1919. Crop production totaled about the same as in the preceding year, but there were somewhat larger changes in the output of individual crops. The cotton crop was about 29 per cent smaller than in 1926, as a result of marked decreases in both the acreage and the yield, while production of barley, rye, hay, and potatoes showed large increases. The output of wheat and corn was also larger than in 1926, although there was a slight decrease in the corn acreage.

The general weighted index of prices of farm products on the farm for the year 1927 averaged about 3½ per cent lower than a year earlier, but closed the year 8 per cent higher than in December, 1926. The index of wholesale prices of domestic farm products in central markets also averaged slightly lower than in the preceding year, but showed the same upward movement during 1927 as the index of farm prices. At the beginning of 1927 prices of nonagricultural commodities were considerably higher as compared to a pre-war base than prices of domestic farm and food products, but this spread gradually narrowed and was eliminated entirely in September. Throughout the last quarter of the year prices of agricultural products averaged higher than other commodities for the first time since 1920. There were considerable differences in the farm-price movement between individual commodities. Cotton and dairy products averaged higher than in 1926, while fruits and vegetables, poultry products, meat animals, and grains were lower. The yearly average of cotton and cottonseed products was only 5 per cent higher in 1927 than in 1926, but the price of cotton at the end of the year was 87 per cent higher than a year earlier, and cottonseed showed an even greater relative increase.

Table 1.—Summary of Agricultural Products

Item	1919	1922	1923	1924	1925	1926	1927
Acreage, 19 principal crops (thousands)	351, 294	347, 616	349, 428	342, 155	346, 690	350, 334	349, 554
Acreage, 7 principal cereals (thousands)	228, 013	221, 761	219, 604	208, 178	212, 184	213, 503	214, 707
Value of agricultural exports (millions of dollars) [1]	4, 096	1, 884	1, 821	2, 110	2, 136	1, 817	1, 885
Value per acre of 10 leading crops (dollars)	35. 74	19. 23	21. 52	23. 88	21. 76	19. 07	20. 89
Index of crop yields [2]	99. 8	96. 7	96. 1	98. 1	99. 6	104. 6	102. 5
Index of farm prices (1910–1914=100)	209	124	135	134	147	136	131
Indexes (1919=100):							
Acreage of 19 crops	100	99. 0	99. 5	97. 4	98. 7	99. 7	99. 5
Acreage of 7 principal cereals	100	97. 3	96. 3	91. 3	93. 1	93. 6	94. 2
Mass of crop production	100	102	102	103	104	106	106

[1] These figures are for the year ending Dec. 31, and exclude forest products.
[2] Based on 10-year moving average; that is, each year is expressed as a percentage of the average for the 10 preceding years, weighted according to crop values in 1919.

As a result of the changes in quantity of production and prices the total value of the barley crop was about 70 per cent greater in 1927 than in 1926. Rye increased 47 per cent and cotton 28 per cent, and the values of the cottonseed, flaxseed, and corn crops were also substantially greater than a year earlier. The potato crop, on the other hand, was 23 per cent lower in value than in 1926, and there was also a slight decrease in the value of the wheat crop.

Agricultural exports were 82 per cent higher in value in 1927 than in 1910-1914 as a result of an increase of 29 per cent in quantity and of 41 per cent in price. Between 1926 and 1927 the quantity of our exports of agricultural commodities increased 6 per cent, while their average price declined 3 per cent. Exports of grains, vegetables, and fruits and nuts were substantially larger in 1927, while the quantity of edible animal products exported was considerably smaller than in 1926.

RECENT MOVEMENTS OF ACREAGE, PRODUCTION, AND VALUE OF CROPS

In 1925, the latest year for which complete data are available, there were 6,372,000 farms in the United States with 924,000,000 acres of land; the value of land, buildings, implements, machinery, and livestock was over $57,000,000,000; and the estimated value of farm products, after deducting crops fed to livestock, was about $13,000,000,000.

Statistics of production of agricultural products have very different significance from those for manufactured, mineral, and forest products. In the latter industries large production is normally a sign of prosperity for producers. The producer has it largely in his power to change the volume of output in accordance with demand. In consequence large production and relatively high prices are likely to go together, and low production and low prices together. In agriculture the adjustment of production to demand is much more difficult and slow. The farmer must produce to meet a demand which may be determined many months or (in the case of animal products) even two or three years later. Moreover, the greater part of the work on farms, especially crop planting, is performed by the owners themselves, so that production can not be much diminished by laying off employees. Finally, crop output is greatly affected by weather conditions outside the control of the producer. It often happens, therefore, that production and prices move by no means in parallel; a large crop may bring less total receipts than a smaller one.

The individual farmer, and still more farmers as a group, normally vary the total acreage planted but little from year to year. They may make considerable adjustments in the relative area devoted to different crops, but even such changes are often limited by characteristics of the soil and other physical conditions.

Aggregate Acreage, Production, and Value of Crops.

The total acreage planted to crops has shown comparatively little change since the end of the World War, during which it had been abnormally stimulated. According to the agricultural census of 1924, the area in principal crops (a figure on a different basis from the Department of Agriculture estimates in Tables 4 and 5) was 338,520,000 acres as compared with 348,549,000 in 1919. According to the estimates of the Department of Agriculture, there was a slight

decrease in total acreage as compared with 1926, but the 1927 acreage was larger than in any other year since 1919. Changes from one year to the next in aggregate production of all crops combined, for the country as a whole, are usually small, unfavorable conditions in one region or for one crop being largely offset by favorable conditions for other regions or other crops. The "mass of crop production" is computed by applying constant prices to the quantities produced in different years and comparing the aggregate values thus obtained. According to this index, total crop production increased 14 per cent from 1921 to 1926 and continued practically unchanged in 1927. No official calculation is made of quantitative changes in the production of animal products as a group.

According to the estimates of the Department of Agriculture, the total value of farm crops in 1926 (the latest year for which data are available) was $9,266,000,000, a decrease of 9 per cent as compared with the value in 1925. The total value of animal products was $7,300,000,000, which was higher than in any year since 1920. The net total value of all farm products, after excluding duplication resulting from the feeding of crops to livestock, was estimated at $12,985,000,000, which is only very slightly less than in 1925, and is larger than in any other year since 1920. Comparisons of the values of crops and of animal products over long periods of years are shown in Table 2, while the comparative values of leading products in recent years are shown in Table 3.

Table 2.—Estimated Value of Farm Products

NOTE.—Values 1897 to 1908 are based on farm prices December 1, while those for 1909 to date are obtained by multiplying crop and animal production by weighted prices for the crop year. Beginning with 1919, a number of items, which previously had not been included in making these estimates were added.

[In millions of dollars]

Year	Crops	Animal products	Crops fed to livestock	Total, excluding crops fed to livestock	Year	Crops	Animal products	Crops fed to livestock	Total, excluding crops fed to livestock
1897	2,519	1,442	1,057	2,904	1912	6,799	3,778	3,110	7,467
1898	2,760	1,579	1,178	3,161	1913	6,717	4,099	2,930	7,886
1899 (census)	3,020	1,718	1,383	3,355	1914	7,268	4,249	3,352	8,165
1900	3,192	1,818	1,461	3,549	1915	7,957	4,303	3,622	8,638
1901	3,385	1,917	1,659	3,643	1916	10,305	4,862	4,808	10,359
1902	3,578	2,016	1,787	3,807	1917	14,277	6,539	6,867	13,949
1903	3,772	2,116	1,752	4,136	1918	14,814	8,082	6,392	16,504
1904	3,982	2,140	1,860	4,262	1919	16,561	8,275	7,159	17,677
1905	4,013	2,261	1,887	4,387	1920	11,578	7,709	4,476	14,811
1906	4,263	2,501	1,980	4,784	1921	7,759	5,589	3,080	10,268
1907	4,761	2,727	2,293	5,195	1922	9,430	5,651	3,870	11,211
1908	5,098	2,792	2,426	5,464	1923	10,401	6,271	4,290	12,382
1909	5,483	3,398	2,409	6,472	1924	10,770	5,902	4,453	12,219
1910	6,211	3,743	2,762	7,192	1925	10,170	6,647	3,783	13,034
1911	6,495	3,485	2,988	6,992	1926	9,266	7,300	3,581	12,985

Source: Bureau of Agricultural Economics, Department of Agriculture.

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Table 3.—Gross Value of Farm Products—Department of Agriculture Estimates

[Values in millions of dollars]

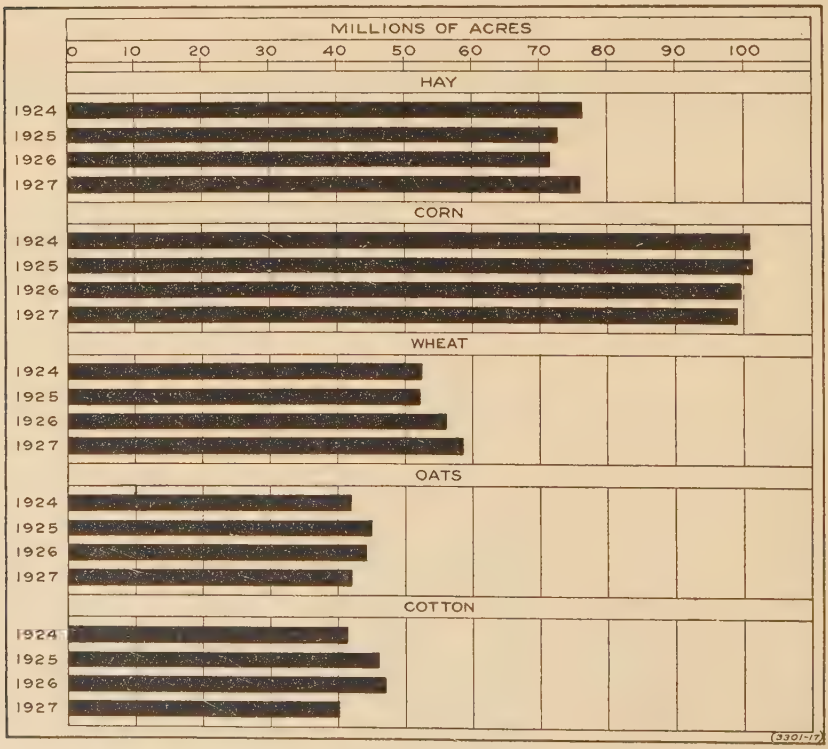
Product	Value			Per cent distribution, 1926	Product	Value			Per cent distribution, 1926
	1924	1925	1926			1924	1925	1926	
Total crops	**10,770**	**10,170**	**9,266**	**100.0**	**Total animal products**	**5,902**	**6,647**	**7,300**	**100.0**
Cereals	4,669	3,917	3,687	39.8	Animals raised	2,243	2,672	3,065	42.0
Cotton	1,766	1,799	1,294	14.0	Bee products	12	12	12	.2
Flax, fiber, and seed	74	50	39	.4	Dairy products	2,586	2,746	2,952	40.3
Fruits	614	668	666	7.2	Poultry products	968	1,117	1,181	16.2
Hay and forage	1,674	1,471	1,490	16.1	Wool	89	95	85	1.2
Legume seed	153	130	124	1.3	Other animal products	4	5	5	.1
Seed for planting	26	38	35	.4					
Sugar crops	150	108	119	1.3					
Tobacco	244	234	245	2.6					
Vegetables	963	1,288	1,117	12.1	**Net total, all products**	12,219	13,034	12,985	-------
Farm-forest products	306	327	318	3.4					
Other crops	131	140	132	1.4					

Source: Bureau of Agricultural Economics, Department of Agriculture.

Principal Individual Crops.

Of the six principal crops, the acreage of wheat, potatoes, and hay increased in 1927 as compared with the preceding year, while the

Chart I.—ACREAGE OF FIVE PRINCIPAL CROPS



acreage of corn, oats, and cotton was reduced. The most important single change in acreage was a decrease of 15 per cent in the amount of land devoted to cotton. Other important changes in acreage

were increases of 34 per cent, 19 per cent, and 12 per cent, in peanuts, barley, and potatoes, respectively. The acreage of wheat in 1927 increased 4 per cent and was larger than in any year since 1923.

Table 4.—Acreage, Production, and Value of Major Crops (Department of Agriculture Estimates)

NOTE.—Acres in thousands, total production (except yield per acre) in thousands of units specified in parentheses and value in thousands of dollars. The figures for 1924 in this table differ appreciably for some crops from the census figures in Table 9.

Year	Acres	Production	Yield per acre	Value [1]	Acres	Production	Yield per acre	Value [1]
	Corn (bushels)				Wheat (bushels)			
1920	101,699	3,208,584	31.5	2,150,332	61,143	833,027	13.6	1,197,263
1921	103,740	3,068,569	29.6	1,297,213	63,696	814,905	12.8	754,834
1922	102,846	2,906,020	28.3	1,910,775	62,317	867,598	13.9	873,412
1923	104,324	3,053,557	29.3	2,217,229	59,659	797,394	13.4	736,006
1924	100,863	2,309,414	22.9	2,266,771	52,535	864,428	16.5	1,123,086
1925	101,359	2,916,961	28.8	1,966,761	52,255	676,429	12.9	957,907
1926	99,713	2,692,217	27.0	1,729,457	56,337	831,040	14.8	995,954
1927	98,914	2,786,288	28.2	2,014,725	58,583	871,691	14.9	974,694
	Oats (bushels)				Barley (bushels)			
1920	42,491	1,496,281	35.2	688,311	7,600	189,332	24.9	135,083
1921	45,495	1,078,341	23.7	325,954	7,414	154,946	20.9	64,934
1922	40,790	1,215,803	29.8	478,948	7,317	182,068	24.9	95,560
1923	40,981	1,305,883	31.9	541,137	7,835	197,691	25.2	107,038
1924	42,110	1,502,529	35.7	717,189	6,925	181,575	26.2	134,590
1925	44,872	1,487,550	33.2	565,506	8,088	216,554	26.8	127,453
1926	44,177	1,246,848	28.2	496,582	7,970	184,905	23.2	106,237
1927	42,227	1,195,006	28.3	537,276	9,492	265,577	28.0	180,127
	Cotton (bales of 500 pounds gross)				Tobacco (pounds)			
1920	35,878	13,440	[2] 178.4	933,658	1,960	1,582,225	807.3	335,675
1921	30,509	7,954	[2] 124.5	643,933	1,427	1,069,693	749.6	212,728
1922	33,036	9,755	[2] 141.2	1,160,968	1,695	1,246,837	735.6	289,248
1923	37,123	10,140	[2] 130.6	1,571,829	1,877	1,515,110	807.2	301,096
1924	41,360	13,628	[2] 157.4	1,540,884	1,706	1,251,343	733.6	259,139
1925	46,053	16,104	[2] 167.2	1,464,032	1,757	1,376,628	783.3	250,774
1926	47,087	17,977	[2] 182.6	982,736	1,656	1,297,889	783.6	236,702
1927	40,168	12,789	[2] 152.3	1,253,599	1,610	1,237,832	768.7	266,356
	Rye (bushels)				Potatoes (bushels)			
1920	4,409	60,490	13.7	76,693	3,657	403,296	110.3	461,778
1921	4,528	61,675	13.6	43,014	3,941	361,659	91.8	398,362
1922	6,672	103,362	15.5	70,841	4,307	453,396	105.3	263,355
1923	5,171	63,077	12.2	40,971	3,816	416,105	109.0	324,889
1924	4,150	65,466	15.8	69,696	3,327	421,585	126.7	263,312
1925	3,974	46,456	11.7	36,340	3,092	323,465	104.6	604.072
1926	3,578	40,795	11.4	34,024	3,122	354,328	113.5	501,017
1927	3,670	58,572	16.0	49,945	3,505	402,149	114.7	387,870
	Flaxseed (bushels)				All hay (short tons)			
1920	1,757	10,752	6.1	18,999	73,888	107,245	1.45	1,783,470
1921	1,108	8,029	7.2	11,648	74,401	97,849	1.32	1,100,060
1922	1,113	10,375	9.3	21,941	77,030	111,879	1.45	1,317,239
1923	2,014	17,060	8.5	35,951	75,424	106,611	1.41	1,398,220
1924	3,469	31,547	9.1	71,728	76,352	112,481	1.47	1,460,430
1925	3,078	22,424	7.3	50,783	72,791	98,441	1.35	1,303,618
1926	2,907	19,335	6.7	37,510	71,702	96,065	1.34	1,314,478
1927	2,907	26,583	9.1	49,373	75,983	123,512	1.63	1,320,524

[1] Based on Dec. 1 prices. [2] Pounds per acre.

Source: Bureau of Agricultural Economics, Department of Agriculture.

The yields per acre of all of the principal crops except cotton and tobacco showed increases in 1927. Yields of barley, rye, and hay showed very substantial increases and were larger than in any other recent year. The yield of cotton, on the other hand, was reduced about 17 per cent, and was smaller than in any year since 1923.

There were a number of marked changes in crop production as a result of the combined effects of these changes in acreage and yields per acre. Production of both barley and rye was 44 per cent larger than in 1926, and the barley output was larger than in any other year. Increases in production of flaxseed and peanuts both exceeded 37 per cent, while hay production was 29 per cent larger than in 1926. The only large decreases in production were shown in the case of cotton and cottonseed, each of which amounted to 29 per cent.

Table 5.—Acreage, Production, and Value of Other Crops (Department of Agriculture Estimates)

[Acreage, and production, (except yield per acre) in thousands; value in thousands of dollars]

Crop	1925	1926	1927	Crop	1925	1926	1927
Rice:				Sweet potatoes:			
Acreage	889	1,034	989	Acreage	779	819	931
Production (bushels)	33,309	41,730	40,231	Production (bushels)	62,319	82,703	93,928
Yield per acre (bushels)	37.5	40.4	40.7	Yield per acre (bushels)	80.0	101.0	100.9
Value [1]	51,232	45,722	37,728	Value [1]	85,034	78,956	77,520
Buckwheat:				Peanuts:			
Acreage	747	694	832	Acreage	958	843	1,132
Production (bushels)	13,994	12,676	16,182	Production (pounds)	698,475	631,825	866,822
Yield per acre (bushels)	18.7	18.3	19.4	Yield per acre (pounds)	729.1	749.5	765.7
Value [1]	12,423	11,183	13,518	Value [1]	25,390	28,161	35,193
Grain sorghums: [2]				Beans, dry, edible: [2]			
Acreage	6,648	6,690	6,733	Acreage	1,606	1,649	1,605
Production (bushels)	106,390	137,515	137,608	Production (bushels)	19,928	17,396	16,872
Yield per acre (bushels)	16.0	20.6	20.4	Yield per acre (bushels)	12.4	10.5	10.5
Value [1]	56,352	74,065	84,802	Value [1]	65,376	51,005	48,732
Cotton seed: [3]							
Production	7,150	7,982	5,678				
Value [1]	194,970	149,121	208,972				

[1] Based on Dec. 1 prices.
[2] For principal producing States only and includes grain equivalent on forage acreage.
[3] Acreage same as for cotton; see Table 4.
Source: Bureau of Agricultural Economics, Department of Agriculture.

Table 6.—Per Cent Change, 1927 from 1926, in Acreage, Production, and Value of Crops

Crop	Acreage	Production	Value	Crop	Acreage	Production	Value
Corn	−0.8	+3.5	+16.5	Cottonseed		−28.9	+40.1
Wheat	+4.0	+4.9	−2.1	Potatoes	+12.3	+13.5	−22.6
Oats	−4.4	−4.2	+8.2	Sweet potatoes	+13.7	+13.6	−1.8
Barley	+19.1	+43.6	+69.6	Flaxseed		+37.5	+31.6
Rye	+2.6	+43.6	+46.8	Tobacco	−2.8	−4.6	+12.5
Rice	−4.4	−3.6	−17.5	Peanuts	+34.3	+37.2	+25.0
Hay (all)	+6.0	+28.6	+.5	Beans, dry, edible	−2.7	−3.0	−4.5
Cotton	−14.7	−28.9	+27.6	Grain sorghums	+.6	+.1	+14.5

Source: Computed from Tables 4 and 5.

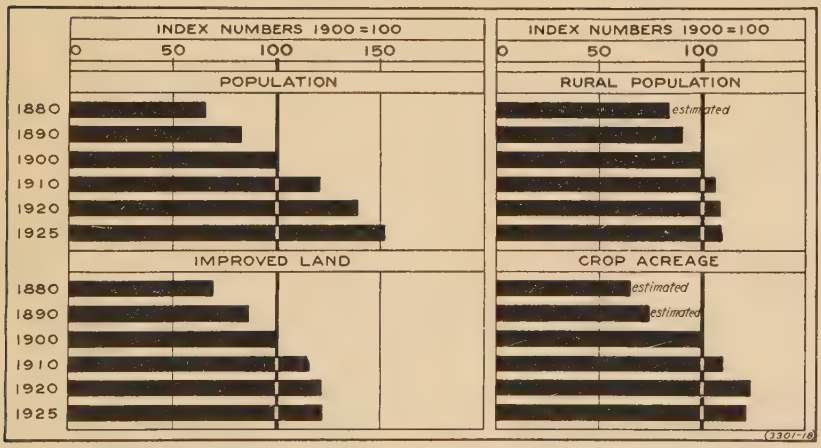
Changes in value of individual crops were particularly noteworthy in 1927. Despite the large decrease in cotton production, the aggregate value of the cotton output increased 28 per cent, while cottonseed showed an even greater gain, amounting to 40 per cent. Potatoes, on the other hand, decreased 23 per cent in value, despite an increase of 14 per cent in production. The changes in value of most of the other crops coincided more closely with the changes in the quantity produced. Barley and rye showed the largest gains in value as well as in quantitative output, with increases in value amounting to 70 per cent and 47 per cent, respectively. The value of the flaxseed crop was 32 per cent greater than in 1926, while peanuts showed a gain of 25 per cent. The important corn crop, which showed only a slight percentage increase in production, had a total farm value which was about one-sixth larger than in 1926.

THE LONGER SWING OF FARM PRODUCTION

Comparative Growth of Population and Agriculture.

Agricultural industry expanded about as fast as the population increased until 1890. (Table 7.) For the next 30 years the growth

Chart II.—POPULATION: RURAL POPULATION, IMPROVED LAND, AND CROP ACREAGE



of agriculture hardly kept pace with that of population and in recent years there has been comparatively little change in the area of agricultural operations.

The rate of increase in the agricultural population throughout our entire history has been materially less than that of the total population, and for the last 20 or 25 years the number of people on the farms has been practically stationary. Wider use of machinery and advances in efficiency, however, have enabled the farm population to materially expand its production per capita. The area of

improved land per capita of the total population of the country was appreciably greater in 1880 and in 1890 (5.7 acres in each of these years) than at the earlier censuses, but it has since shown a decided falling off, being 4.4 acres in 1925.

Census figures for total area in harvested crops are available only since 1899. As against a gain of 21 per cent in population from 1900 to 1910, the acreage in crops (orchards and a few minor crops not included) increased 10 per cent; during the next decade the corresponding increases were 15 and 12 per cent, respectively. The acreage of harvested crops as reported by the census (counting in 1924 only those included in 1919) was 2.9 per cent less in 1924 than in 1919, the acreage of cereals having fallen no less than 14.5 per cent. (Table 9.)

Table 7.—Comparative Growth of Population and Agriculture

NOTE.—"Rural Population" is that outside incorporated places or certain New England towns; while the "Rural Population" generally shown by the Census includes incorporated places of less than 2,500 inhabitants.

Census year	Population (thousands)			Area (thousands of acres)				Number of farms (thousands)	Average acres per farm
	Total	Rural	Per cent rural	All farm land	Improved land	Harvested crops [1]	Cereals [2]		
1850	23,192			293,561	113,033			1,449	202.6
1860	31,443			407,213	163,111			2,044	199.2
1870	[3] 38,558			407,735	188,921			2,660	153.3
1880	50,156	[4] 32,950	65.0	536,082	284,771		118,806	4,009	133.7
1890	62,948	35,891	57.0	623,219	357,617		140,379	4,565	136.5
1900	75,995	39,313	51.7	838,592	414,498	283,149	184,982	5,737	146.2
1910	91,972	41,637	45.3	878,798	478,452	311,195	191,396	6,362	138.1
1920	105,711	42,437	40.1	955,884	503,073	348,549	219,031	6,448	148.2
1925	[4] 115,378	43,000	37.3	924,319	[5] 505,027	[6] 344,549	[7] 186,338	6,372	145.1

Census year	Percentage of increase over preceding census					Acres per capita of total population			Percentage of total area of United States in—		Percentage of farm land improved
	Population	Rural population	Improved land	Acreage in crops	Acreage in cereals	Improved land	Harvested crops	Cereals	Farm land	Improved land	
1850						4.87			15.6	6.0	38.5
1860	35.6		44.3			5.19			21.4	8.6	40.1
1870	[3] 22.6		15.8			4.90			21.4	9.9	46.3
1880	30.1		50.7			5.68		2.37	28.2	15.0	53.1
1890	25.5	9.5	25.6		18.2	5.68		2.23	32.7	18.8	57.4
1900	20.7	9.5	15.9		31.8	5.45	3.73	2.43	44.1	21.8	49.4
1910	21.0	5.9	15.4	9.9	3.5	5.20	3.38	2.08	46.2	25.1	54.4
1920	14.9	1.9	5.1	12.0	14.4	4.76	3.30	2.07	50.2	26.4	52.6
1925	9.1	1.3	.4	−1.1	−14.5	4.38	2.99	1.62	48.6	26.5	54.6

[1] Data relate to preceding year; a few minor crops are not covered.
[2] Data relate to preceding year.
[3] It is generally considered that the census of 1870 understated the population in the South. Other data may also have been understated.
[4] Estimated.
[5] Not strictly comparable with earlier years, based on new forms of questions.
[6] Includes acreage in fruits and nuts and sundry minor crops, which is not shown in Table 9.
[7] Emmer and spelt and mixed crops excluded. See note 2, Table 9.

Source: Bureau of the Census.

The average size of farms has shown no great change in recent decades. The breaking up of large ranches in the West has been offset by some increase in the prevailing size of farms in the States of longer settlement.

The value of farm property between 1900 and 1910 more than doubled and during the next 10 years it nearly doubled again, the cause lying partly in the expansion of the agricultural area and equipment, partly in the rise of the general price level of commodities, and partly in speculative anticipation of further advances in prices of farm products. The sharp fall in prices of agricultural products following 1920 resulted in a great decline in the values of farm property. Land and buildings had been valued at $66,300,000,000 in 1920, but fell to $49,500,000,000 in 1925. The average value of farm land and buildings per acre for the country as a whole was more than $69 in 1920 and about $53.50 in 1925.

Farm Tenure.

The relative growth of farm tenancy is shown in Table 8. The percentage of tenants rose from 35.3 in 1900 to 38.6 in 1925. Somewhat more than one-fourth of the total farm acreage and about one-third of the improved farm land is operated by tenants. A large proportion of the tenant farmers are young men, often sons or sons-in-law of the owners, and the great majority of the older farmers own their land.

Table 8.—Farm Tenure

Item	Farms operated by owners and managers [1]				Farms operated by tenants			
	1900	1910	1920	1925	1900	1910	1920	1925
Number of farms	3,712,408	4,006,826	3,993,539	3,909,032	2,024,964	2,354,676	2,454,804	2,462,608
Per cent of all farms	64.7	63.0	61.9	61.4	35.3	37.0	38.1	38.6
Acreage:								
All land (thousands of acres)	643,558	652,285	690,904	659,432	195,034	226,513	264,980	264,887
Per cent distribution	76.7	74.2	72.3	71.3	23.3	25.8	27.7	28.7
Improved land (thousands of acres)	289,141	322,164	327,318	(2)	125,358	156,287	175,755	(2)
Per cent distribution	69.8	67.3	65.1	(2)	30.2	32.7	34.9	(2)

[1] Acreage includes any additional land rented by a farm owner. Farms operated by managers are only (1925) about 1 per cent of all farms, but occupy 4.7 per cent of total acreage, and their share of improved acreage in 1920 was 2.6 per cent (1925 not reported).
[2] Not available.
Source: Bureau of the Census.

Acreage and Production of Crops, 1889 to 1924.

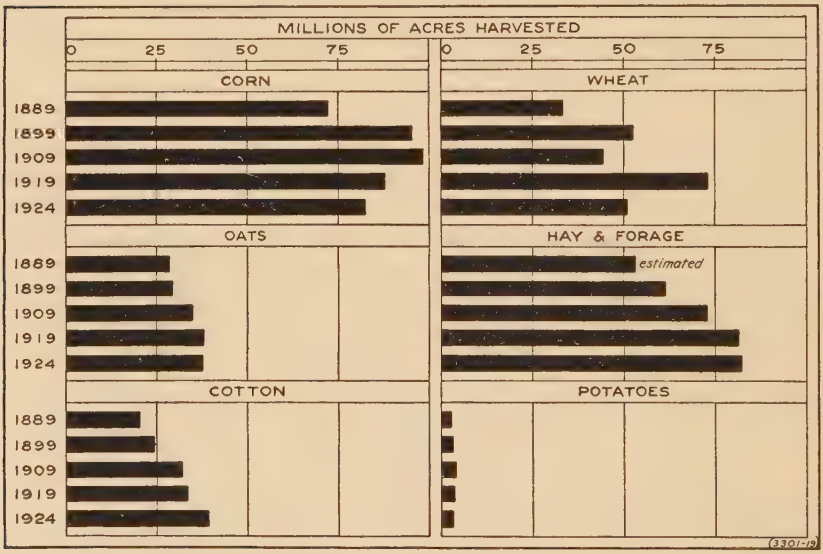
For long-term comparison of crop changes the decennial censuses furnish the most accurate basis. (Tables 9 and 10.) The census figures for individual crops, however, are more satisfactory as an indication of tendencies in acreage than in production, since weather conditions in a given census year may be unusually favorable or otherwise, resulting in considerable variation from normal yield.

Cereals occupied a decidedly smaller proportion of the total area in crops in 1924 than at any previous census, the absolute total for cereals being but little greater than in 1899. The area in hay and forage has risen quite steadily. Cotton acreage increased rapidly down to 1909 but, owing to the ravages of the boll weevil, remained substantially stationary for some time thereafter; in recent years it has again expanded rapidly.

Average Yields per Acre.

In considering average yields (Table 11) it should be borne in mind that agriculture has been pushing gradually westward. From

Chart III.—ACREAGE OF PRINCIPAL CROPS (CENSUS RETURNS)



about 1890 down to 1920 this movement involved the increasing cultivation, especially for cereals, of land with inadequate rainfall; since 1920 some of this land has ceased to be cultivated. There has been, decade by decade, improvement in methods of cultivation, seed selection, etc., with consequent higher yields per acre in any given region, but for certain crops this improvement has been in considerable part offset in the averages for the country as a whole by the lower yield on much of the land added to cultivation. In 1927 9 of the 12 crops in Table 11 showed an increase in average yield over 1926 and all crops except oats had a higher yield than in the five-year period, 1921 to 1925. Hay, barley, and rice in 1927 reached yields per acre higher than the average for any other period shown in the table.

Table 9.—Comparative Acreage and Production of Principal Crops (Census Returns)

[All figures expressed in thousands of acres or of units specified: Hay and forage, hay, sugar cane, and sugar beets, in tons; tobacco, in pounds; small fruits, in quarts; cotton, in running bales; and all other items, in bushels. Total acreage for 1924 excludes crops not shown by acreage at previous censuses]

Crop	Acres harvested (thousands)				Production (thousands of units specified)			
	1899	1909	1919	1924	1899	1909	1919	1924
All crops with acreage reports	[1] 283, 149	[1] 311, 195	[1] 348, 549	[1] 338, 520				
All cereals [2]	184, 982	191, 396	219, 031	186, 338	4, 438, 857	4, 512, 564	4, 681, 216	4, 244, 398
Corn harvested for grain	94, 914	98, 383	87, 772	82, 329	2, 666, 324	2, 552, 190	2, 345, 833	1, 823, 880
Wheat	52, 589	44, 263	73, 099	50, 862	658, 534	683, 379	945, 403	800, 877
Oats threshed for grain	29, 540	35, 159	37, 991	37, 650	943, 389	1, 007, 143	1, 055, 183	1, 304, 599
Barley	4, 470	7, 699	6, 473	6, 767	119, 635	173, 344	122, 025	159, 139
Rye	2, 054	2, 196	7, 679	3, 744	25, 569	29, 520	75, 992	55, 674
Rice (rough)	342	610	911	744	9, 003	21, 839	35, 331	29, 526
Sorghums, harvested for grain	267	1, 635	3, 619	3, 526	5, 169	17, 597	72, 086	58, 700
Beans (dry edible)	454	803	1, 162	1, 637	5, 064	11, 251	14, 079	[3]
Peas (dry)	968	1, 305	866	[3]	9, 440	7, 129	5, 743	[3]
Flaxseed	2, 111	2, 083	1, 261	3, 435	19, 979	19, 513	6, 653	28, 246
Peanuts	517	870	1, 125	1, 105	11, 964	19. 416	27, 450	26, 899
Hay and forage, including corn cut for forage			96, 121	[4] 88, 987			146, 343	[3]
Hay and forage, excluding corn cut for forage	61, 691	72, 402	81, 618	[4] 82, 314	79, 252	97, 755	128, 549	[4] 116, 792
Hay alone	58, 584	68, 227	72, 780	74, 096	71, 113	87, 216	90, 356	[5] 88, 384
Tobacco	1, 101	1, 295	1, 861	1, 538	868, 113	1, 055, 765	1, 371, 504	1, 106, 340
Cotton	24, 275	32, 044	33, 740	39, 204	9, 535	10, 649	11, 376	13, 683
Potatoes	2, 939	3, 669	3, 252	2, 911	273, 318	389, 195	290, 428	352, 462
Sweet potatoes	537	641	804	467	42, 517	59, 232	78, 092	37, 444
Other vegetables [6]	2, 162	2, 763	1, 475	1, 634	[3]	[3]	[3]	[3]
Sugar cane	387	477	373	[7] 326	4, 202	6, 240	3, 545	[7] 1, 664
Sugar beets grown for sugar	110	360	636	743	793	3, 902	5, 993	6, 989
Small fruits	310	272	249	[3]	463, 219	426, 566	324, 989	[3]
Orchard fruits	[3]	[3]	[3]	[3]	212, 366	213, 974	230, 682	[3]

[1] Excluding corn cut for forage (14,502,932 acres and 17,793,742 tons in 1919); the acreage is practically all duplicated in the acreages shown for corn harvested as grain.

[2] Emmer and spelt and mixed crops in 1924 excluded; earlier years, included. The acreage and production for these crops in 1919 were 743,907 acres, and 16,443,653 bushels.

[3] Not available.

[4] Exclusive of root crops for forage.

[5] Included in the hay production is an undetermined tonnage of sorghum cut for hay, the acreage being shown separately.

[6] Including farm gardens in 1899 and 1909, in 1919 vegetables raised for sale only, and in 1924 only seven vegetables.

[7] Acreage for all States, for Louisiana, 265,157; production for Louisiana only.

Source: Bureau of the Census.

Table 10.—Indexes of Acreage and Production of Principal Crops (Census Returns)

Crop	Acreage (1899=100)					Production (1899=100)				
	1889	1899	1909	1919	1924	1889	1899	1909	1919	1924
All crops with acreage reports		100	110	123	120					
All cereals	76	100	103	118	101	79	100	102	105	96
Corn	76	100	104	92	87	80	100	96	88	68
Wheat	64	100	84	139	97	71	100	104	144	122
Oats	96	100	119	129	127	86	100	107	112	138
Barley	72	100	172	145	151	65	100	145	102	133
Rye	106	100	107	374	182	111	100	115	297	218
Tobacco	63	100	118	169	140	56	100	122	158	127
Cotton	83	100	132	139	161	78	100	112	119	144
Potatoes	89	100	125	111	99	80	100	142	106	129
Sweet potatoes	98	100	119	150	87	103	100	139	184	88

Source: Computed from Table 9.

Table 11.—Average Yield per Acre of the Principal Crops

Yearly average or year	Corn	Wheat	Oats	Barley	Rye	Rice	Potatoes	Sweet potatoes	Cotton	Tobacco	Hay (tame)	Flaxseed
	Bu.	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Lbs.*	*Lbs.*	*Tons*	*Bu.*
1866–1875	26.1	12.0	28.2	22.6	13.6	-------	93.0	-------	176.2	-------	1.22	-------
1876–1885	25.4	12.3	27.4	22.4	13.0	-------	81.2	-------	170.7	-------	1.24	-------
1886–1895	23.8	12.7	26.1	22.8	12.8	-------	74.4	-------	176.9	-------	1.18	-------
1896–1900	26.2	12.9	28.9	23.9	15.1	-------	81.7	-------	193.3	-------	1.38	-------
1901–1905	25.3	14.0	30.7	27.2	15.9	-------	89.3	87.5	184.8	800	1.51	-------
1906–1910	27.6	14.7	28.4	25.1	16.3	32.4	97.1	90.9	180.3	826	1.44	8.7
1911–1915	26.0	15.5	31.7	26.5	16.5	33.8	98.4	95.7	192.0	813	1.41	8.5
1916–1920	27.0	13.6	33.2	24.1	13.9	39.1	96.0	97.2	163.2	812	1.51	6.4
1921–1925	27.8	13.8	30.9	24.8	13.8	38.7	107.5	89.3	146.4	763	1.51	8.3
1923	29.3	13.4	31.9	25.2	12.2	37.7	109.0	97.9	130.6	807	1.49	8.5
1924	22.9	16.5	35.7	26.2	15.8	38.2	126.7	78.4	157.4	734	1.60	9.1
1925	28.8	12.9	33.2	26.8	11.7	37.5	104.6	80.0	167.2	783	1.47	7.3
1926	27.0	14.8	28.2	23.2	11.4	40.4	113.5	101.0	182.6	784	1.47	6.7
1927	28.2	14.9	28.3	28.0	16.0	40.7	114.7	100.9	152.3	769	1.74	9.1

Source: Bureau of Agricultural Economics, Department of Agriculture.

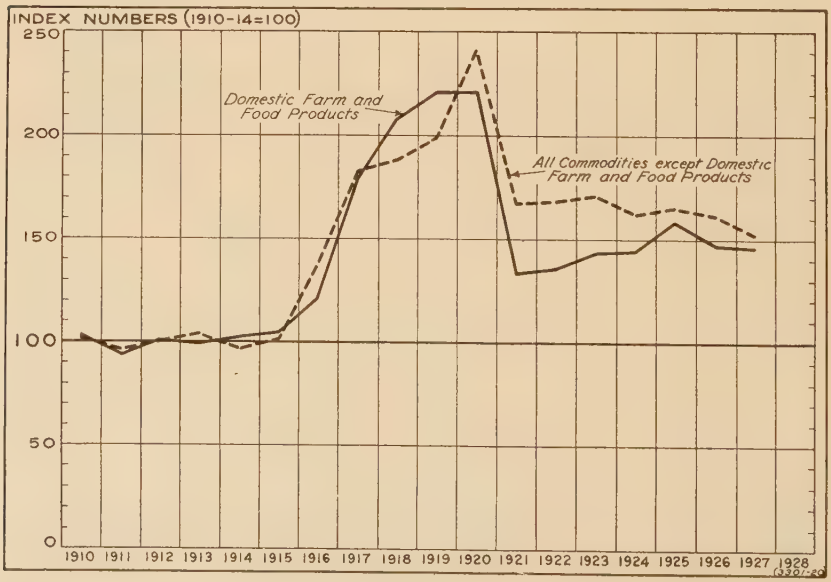
PRICES OF AGRICULTURAL PRODUCTS

During the year 1927 the prices of domestic farm and food products showed but a slight decline on the average as compared with 1926. There were large differences in the movement of the various commodities.

General Price Indexes of Agricultural and Other Products.

Table 12 and Chart IV present comparative index numbers for the prices of agricultural products and of other commodities. In all

Chart IV.—COMPARATIVE INDEXES OF WHOLESALE PRICES OF AGRICULTURAL AND OTHER PRODUCTS



of these indexes the individual products included are weighted according to their approximate importance. The index numbers are all based on 1910–1914 taken as 100. Some difference in movement

appears between central-market prices of domestic farm and food products and those of all farm and food products, including imported articles, but greater interest attaches to the former.

Table 12.—Index Numbers of Prices of Agricultural and Other Products

Yearly average or year	Farm prices, 30 commodities, 1910–1914 = 100	Wholesale prices, central markets, 1910–1914 = 100				
		Domestic and imported farm products	Domestic and imported food products	Domestic farm and food products	All commodities, except domestic farm and food products	All commodities
1890–1894	(1)	69	82	(1)	(1)	77
1895–1899	(1)	60	72	(1)	(1)	71
1900–1904	(1)	77	81	(1)	(1)	85
1905–1909	(1)	86	89	(1)	(1)	93
1910–1914	100	100	100	100	100	100
1915–1920	168	181	167	176	175	175
1921–1925	131	140	145	143	167	154
1913	100	100	99	99	104	102
1920	205	218	218	221	241	230
1921	116	124	143	133	167	150
1922	124	133	137	136	168	152
1923	135	141	143	143	171	157
1924	134	143	143	144	162	152
1925	147	158	156	158	165	162
1926	136	142	152	147	161	154
1927	131	144	148	146	152	149

[1] Not available.

Sources: Farm prices, Bureau of Agricultural Economics, Department of Agriculture; wholesale prices, Bureau of Labor Statistics, Department of Labor.

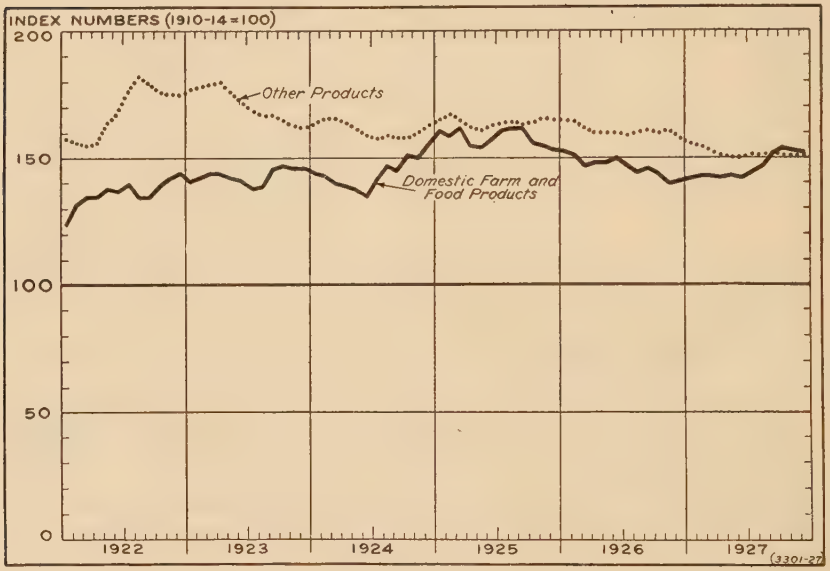
The movement of prices on the farm is naturally broadly parallel to that of prices of the same products in central markets. In spite of the fact that railroad rates and marketing costs enter as considerable factors into central market prices and that railroad rates have been more stable than farm prices, the parallelism in the movements of farm prices and of the prices of domestic farm products in central markets was very close from 1920 to 1926. Central market prices decreased in 1927 less than farm prices, with the result that the 1927 spread of 10 per cent was slightly more than the postwar average. The difference is owing partly to the inclusion of railroad rates and marketing costs in the central market prices, and partly to differences in the composition and weighting of the two sets of index numbers. For example, the farm price index includes horses and mules which, on account of the development of motor cars and tractors, have fallen greatly in price, while these animals are not included in the central market index.

Farm prices during 1927 averaged 3½ per cent lower than for 1926 and 13 per cent higher than for 1921. (Table 12.) While the average index for the year was somewhat lower than in 1926, the trends within the years were considerably different than the averages indicate. At the end of 1926 the index stood at 127, to which it had fallen from

143 in January. The index advanced from 126 in January, 1927, to 140 in September, most of the increase occurring in the summer months. There was a slight recession in the fall, and the December index number was 137, which was 8 per cent higher than a year earlier. During the course of 1927 wholesale prices of farm products increased in about the same proportion as the farm prices. (Tables 13 and 14.)

Methods of comparing the prices of farm products with prices in general depend upon the purpose in view. Farmers are purchasers of all classes of products; they buy farm products themselves, their

Chart V.—COMPARATIVE INDEXES OF WHOLESALE PRICES OF AGRICULTURAL AND OTHER PRODUCTS, BY MONTHS



purchases of draft animals, meat animals for fattening, and grain for feeding especially attaining great magnitude. From one point of view, therefore, it is proper to compare farm products with all commodities, including farm products. From another point of view comparison may be made with all commodities, excluding farm products and also food products which consist in large part of manufactures derived from farm products. The weight assigned to farm products and food products in the all-commodity index is large, so that their changes greatly affect the general movement.

From the nineties, when prices of farm products had been disastrously low, down to 1913, the wholesale prices of farm and food products advanced considerably more than those of other commodities. (Table 12.) During the war and the immediate postwar boom the two moved in close parallelism and reached substantially the same peak in the spring of 1920. The subsequent decline in

farm products, however, was much greater than that in commodities in general. The spread between the index of domestic farm and food products (1910–1914 taken as 100) and that for all other commodities in wholesale markets averaged 34 points in 1921, a difference of over 25 per cent. This spread narrowed to 7 points in 1925; widened to 14 points in 1926; and in 1927 decreased to 6 points.

Monthly comparisons show considerable variation in the relation between these two central-market indexes. (Table 13 and Chart V.) In the first half of 1924 the index for domestic farm and food products stood from 20 to 26 points below that for other commodities, but by December the spread had fallen to about 7 points, and by March, 1925, to 3 points. By September the farm and food index had advanced until it stood only one point below the other products, the narrowest spread at any time since the spring of 1920.

Table 13.—Comparative Monthly Indexes of Wholesale Prices of Domestic Farm and Food Products and All Other Products

[1910–1914=100]

Month	1922		1923		1924		1925		1926		1927	
	Domestic farm and food products	Other products	Domestic farm and food products	Other products	Domestic farm and food products	Other products	Domestic farm and food products	Other products	Domestic farm and food products	Other products	Domestic farm and food products	Other products
January	124	158	141	177	144	164	161	165	153	165	142	156
February	132	156	142	178	143	166	159	167	151	164	143	155
March	135	155	144	179	140	166	162	165	147	162	143	153
April	135	156	144	180	139	164	155	162	148	160	142	151
May	138	164	142	176	138	162	154	161	148	160	143	150
June	137	168	141	172	135	159	157	163	150	160	142	150
July	140	177	138	169	141	158	161	164	147	159	144	151
August	135	182	139	167	147	159	162	164	144	160	147	151
September	135	179	146	167	145	158	162	163	146	161	152	152
October	139	176	147	165	151	158	156	164	144	160	154	151
November	142	175	146	163	150	160	155	166	140	161	153	151
December	144	175	146	162	156	163	153	165	141	158	152	151

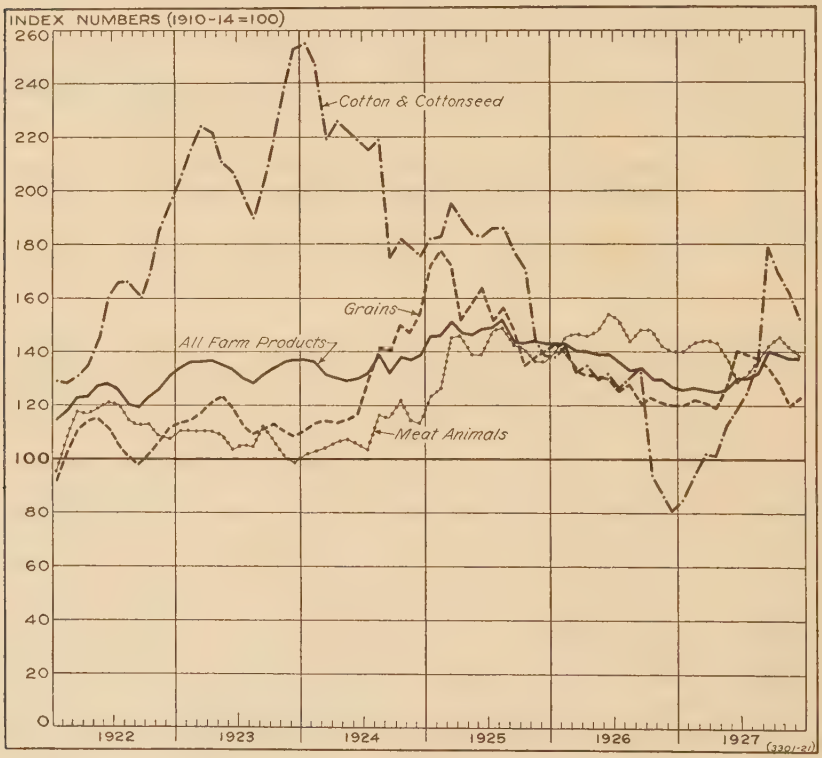
Sources: Compiled from reports of the Bureau of Labor Statistics, Department of Labor, by the Bureau of Agricultural Economics, Department of Agriculture.

During the last few months of 1925 farm and food products as a group fell off appreciably, while other products rose so that at the close of the year the spread was 12 points. Farm products declined during 1926 while other commodities showed little change, and the spread widened in November of that year to 21 points. As the result of a decline in prices of nonagricultural commodities in the early months of 1927 and a sharp advance in prices of farm products during the summer, the index numbers of the two groups were the same in September. In October, 1927, the farm and food products group was higher than that of other products for the first time since January, 1920, and remained higher through December, 1927.

Prices of Farm Products by Groups.

The general indexes of farm products, whether on the farm or in central markets, fail to bring out the marked differences of movements among the several subgroups and individual commodities. (Chart VI and Table 14.) In comparisons of current farm prices with pre-war levels, for example, there is a very large difference between the indexes in January, 1927, for grains (120), poultry prod-

Chart VI.—INDEX NUMBERS OF FARM PRICES—ALL PRODUCTS AND GROUPS



ucts (173), and for cotton and cottonseed (85). The level of the last group had been brought down by the record cotton crop harvested late in 1926. On the whole, the range among the different groups was considerably smaller in 1927 than in 1926. In 1927 cotton and cottonseed and the dairy products were slightly higher than in 1926, and the other groups were lower.

Average prices for calendar years have comparatively little significance in the case of crops. Prices following the harvest may be on an entirely different level from those earlier in the year. For the year 1927 as a whole, farm prices of grains averaged slightly lower than in 1926; fruits and vegetables, 18 per cent lower; poultry products, 9.6

per cent lower; and meat animals, 4.8 per cent lower. Cotton and cottonseed averaged 4.9 per cent and dairy products 1.5 per cent higher than in 1926.

Table 14.—Index Numbers of Farm Prices and Wholesale Prices of Agricultural Products, by Groups

[An asterisk (*) indicates the minimum and a dagger (†) the maximum month]

Period (calendar year)	Farm prices, 30 commodities, 1910–1914=100							Wholesale prices, 1913=100				
	Farm products	Grains	Fruits and vegetables	Meat animals	Dairy products	Poultry products	Cotton and cottonseed	Farm products	Grains	Livestock and poultry	Other farm products	Cotton [1]
1910–1914	100	100	100	100	100	100	100	100.0	(2)	(2)	(2)	(2)
1913	100	92	92	108	100	101	97	100.0	100.0	100.0	100.0	100.0
1919	209	231	189	206	173	206	247	230.8	250.6	210.9	240.4	250.8
1920	205	231	249	173	188	222	248	217.9	255.5	175.4	240.7	259.9
1921	116	112	148	108	148	161	101	123.7	134.2	107.7	134.2	111.3
1922	124	105	152	113	134	139	156	133.3	124.2	116.4	153.7	160.6
1923	135	114	136	106	148	145	216	141.1	124.5	109.6	178.8	226.0
1924	134	129	124	109	134	147	211	143.4	141.3	112.4	173.6	219.8
1925	147	156	160	139	137	161	177	158.1	172.3	140.1	167.0	181.3
1926	136	129	189	146	136	156	122	142.2	148.1	135.4	144.4	132.5
1927	131	128	155	139	138	141	128	143.5	145.4	140.3	144.2	135.7
Per cent change, 1926 to 1927	−3.7	−.8	−18.0	−4.8	+1.5	−9.6	+4.9	+.9	−1.8	+3.6	−.1	+2.4
1925												
January–March	148	174	130	131	135	168	187	162.1	193.3	131.3	175.4	194.0
April–June	147	158	164	141	131	131	185	153.4	174.1	136.3	158.5	188.7
July–September	148	152	166	147	134	147	183	161.8	163.6	154.7	166.0	184.4
October–December	143	138	180	138	146	199	151	153.5	158.9	136.9	166.3	158.1
December	143	140	194	136	146	213	139	152.2	165.3	130.5	165.6	152.3
1926												
January–March	142	139	217	144	144	148	138	148.6	161.8	133.1	155.7	153.5
April–June	139	131	236	149	130	135	132	144.3	149.9	138.3	145.8	141.0
July–September	134	125	166	148	130	143	130	139.9	141.2	137.0	140.7	137.8
October–December	129	121	138	143	140	196	88	136.0	140.9	132.5	135.5	98.3
December	127	120	137	140	144	212	81	134.9	142.2	128.8	136.0	96.4
1927												
January	126	120	140	140	144	173	*85	137.2	140.8	135.7	135.3	*103.5
February	127	122	142	143	143	145	94	136.9	139.9	138.8	132.0	108.6
March	126	121	140	144	139	115	102	*136.6	136.7	142.2	*129.5	111.6
April	*125	*119	147	143	140	114	101	136.7	*136.6	142.2	129.6	112.6
May	126	127	158	137	136	112	113	137.4	151.3	130.7	135.8	123.9
June	130	†140	†201	*129	132	*102	119	138.2	†157.3	*126.6	138.7	129.2
July	130	139	195	131	130	112	125	140.5	153.1	133.6	139.6	139.0
August	132	138	172	136	*129	122	136	146.2	152.9	137.3	150.0	154.9
September	†140	134	145	142	135	143	†179	152.9	144.9	148.5	159.5	†168.5
October	139	128	138	†145	139	167	169	†153.4	141.9	†152.8	158.1	164.1
November	137	120	*136	141	141	189	162	153.0	142.8	151.6	157.8	159.1
December	137	123	141	138	†145	†195	153	153.1	145.9	144.7	†163.3	151.2

[1] New Orleans prices; cotton is included in the preceding column, "Other farm products," in which it is a dominant item.

[2] Not avilable.

Sources: Farm prices from Bureau of Agricultural Economics, Department of Agriculture; wholesale prices from Bureau of Labor Statistics, Department of Labor.

There was a slightly larger decrease in the grain group in the central market index for 1927 as a whole than in the farm price of grain, while the increase of the central market index of cotton was somewhat smaller than that of the farm price. Moreover, the central market index of livestock and poultry rose 3.6 per cent, while the farm price index for meat animals decreased 4.8 per cent. In December, 1927, all the groups of farm prices were higher than in December, 1926, except the meat-animals and the poultry-products groups. The most notable

change was in cotton and cottonseed, which showed an increase of 89 per cent between the two dates. In 1927 the farm price of the grain group increased with occasional setbacks from January to June; from July to November the trend was downward, and the index in December was 3 points higher than in November. The trend of the fruit-and-vegetable group was similar to that of grain. The meat-animal group remained comparatively stabilized for the first four months of the year but declined in May and June, increased from July to October, and declined in November and December. Poultry products declined from January to June but rose from July to December. Cotton and cottonseed rose, with one exception, from January to September, then declined until December; the December price was, however, considerably higher than in December of the year preceding.

Farm Prices of Leading Individual Products.

The significance of changes in prices of individual crops is much clearer when they are presented on a crop-year basis. The farm prices by crop years shown in Chart VII and Tables 15 and 16 are weighted averages for the entire country, and the yearly figures are weighted according to the volume marketed each month.

Table 15.—Farm Prices of Individual Crops, by Crop Years

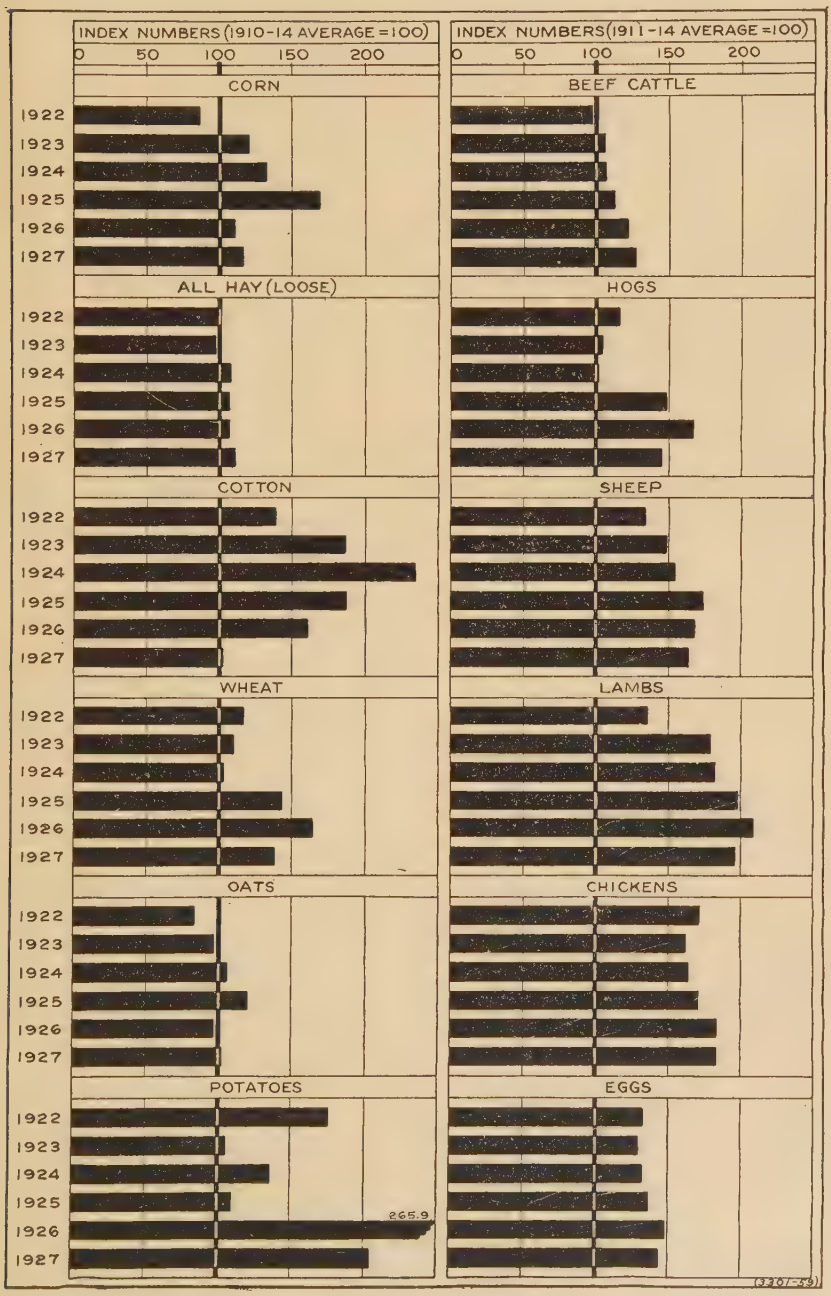
NOTE.—Prices represent weighted averages for the entire country. Yearly averages are weighted according to quantities marketed each month. All prices in cents per bushel, except for hay and cottonseed, which are in dollars per ton, and cotton in cents per pound. Crop year ends in June for wheat, rye, hay, and potatoes; in October for corn, and in July for other crops named. Quotations are as of the 15th of each month.

Crop year ending—	Wheat	Rye	Corn	Oats	Barley	Potatoes	All hay (loose)	Cottonseed	Cotton
1910–1914	88.7	72.1	62.8	39.9	60.8	69.0	11.83	21.10	12.2
1915–1920	162.1	126.1	118.8	59.7	89.9	127.8	15.05	59.39	25.4
1921–1925	121.1	91.8	76.6	42.9	61.0	99.5	13.14	32.74	21.4
1920	218.6	146.9	151.5	80.3	124.9	223.8	21.34	67.27	35.2
1921	182.9	148.2	62.1	51.1	70.7	131.5	16.51	22.95	15.8
1922	104.4	86.9	54.3	33.4	48.4	121.3	11.83	29.72	17.0
1923	98.0	68.1	76.7	39.0	51.8	73.9	11.68	34.70	22.8
1924	92.4	59.4	84.0	42.6	56.8	94.2	12.93	42.23	28.7
1925	127.8	96.3	105.8	48.3	77.1	76.5	12.76	34.08	22.9
1926	145.9	83.1	70.4	38.8	58.7	183.5	12.77	30.82	19.6
1927	122.8	84.2	73.7	41.1	59.4	140.8	13.23	21.63	12.5
December, 1926	122.8	82.4	64.5	41.1	56.4	137.0	13.47	18.05	10.0
July, 1927	127.3	91.2	92.4	46.3	71.4	183.1	11.71	26.59	15.5
August	123.5	80.6	97.7	44.4	69.0	146.3	9.97	25.95	17.1
September	119.2	81.4	95.3	43.9	69.5	107.4	10.51	34.41	22.5
October	113.7	81.0	87.6	44.6	66.8	97.9	10.63	36.60	21.0
November	111.4	84.0	73.7	45.1	66.8	95.4	10.54	37.51	20.0
December	113.9	87.8	75.1	48.1	71.5	94.1	10.55	37.14	18.7
	Index numbers, 1910–1914=100 [1]								
1915–1920	182.8	174.9	189.2	149.6	147.9	185.2	127.2	281.5	208.2
1921–1925	136.5	127.3	122.0	107.5	100.3	144.2	111.1	155.2	175.4
1920	246.4	203.7	241.2	201.3	205.4	324.3	180.4	318.8	288.5
1921	206.2	205.5	98.9	128.1	116.3	190.6	139.6	108.8	129.5
1922	117.7	120.5	86.5	83.7	79.6	175.8	100.0	140.9	139.3
1923	110.5	94.5	122.1	97.7	85.2	107.1	98.7	164.5	186.9
1924	104.2	82.4	133.8	106.8	93.4	136.5	109.3	200.1	235.2
1925	144.1	133.6	168.5	121.1	126.8	110.9	107.9	161.5	187.7
1926	164.5	115.3	112.1	97.2	96.5	265.9	107.9	146.1	160.7
1927	138.4	116.8	117.4	103.0	97.7	204.1	111.8	102.5	102.5
December, 1926	138.4	114.3	102.7	103.0	92.8	198.6	113.9	85.5	82.0
December, 1927	128.4	121.8	119.6	120.6	117.6	136.4	89.2	176.0	153.3

[1] Cottonseed average used as base for the index number is for years ending 1911 to 1914 and covers only 11 months of crop year 1910–11.

Source: Bureau of Agricultural Economics, Department of Agriculture.

Chart VII.—INDEXES OF FARM PRICES OF PRINCIPAL FARM PRODUCTS



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As a result of larger production of cereals in 1927 the price of wheat and corn declined after the harvest. Oats and barley were slightly higher in December than just before harvest. The price of potatoes, which was high in the crop year 1926–27, declined sharply after the harvest of 1927, owing to a large increase in the crop, and in December, 1927, the average price was 94 cents per bushel as compared with $1.83 per bushel in July and $1.37 in December, 1926.

As the result of the large cotton crop the price of cotton for the crop year ending July 31, 1927, was over one-third lower than for the preceding crop year, but the acreage and production was reduced in 1927 and the price rose from 10 cents per pound in December, 1926, to 22½ cents per pound in September, 1927. In December, 1927, the price was somewhat lower than in September, but was 87 per cent higher than a year earlier. The trend of cottonseed prices was similar to those of cotton; the price about doubled during 1927.

Table 16.—Farm Prices of Individual Livestock and Animal Products, by Market and Calendar Years

NOTE.—Prices represent weighted averages for the entire country. Yearly averages are weighted according to volume marketed each month. Market year ends in July for cattle, October for hogs, May for lambs, June for chickens, March for eggs. Quotations are as of the 15th of each month. All prices in cents per pound except for eggs, which are in cents per dozen.

Yearly average, year, or month	Market year					Calendar year			
	Beef cattle	Hogs	Lambs	Chickens	Eggs	Veal calves	Sheep	Wool, unwashed	Butter
1911–1914	5.24	7.01	5.76	11.2	19.0	6.95	4.44	17.0	25.1
1915–1920	7.91	12.04	10.61	17.3	28.6	10.49	8.35	41.0	39.5
1921–1925	5.79	8.30	9.91	19.6	28.1	8.15	6.35	32.1	38.6
1920	9.00	13.43	13.05	24.2	41.8	11.80	8.51	39.1	54.3
1921	6.76	8.52	9.41	22.8	39.3	7.81	4.65	16.4	37.0
1922	5.18	8.10	7.83	19.3	25.3	7.68	5.96	29.8	35.3
1923	5.55	7.34	10.30	18.2	24.7	7.99	6.65	38.9	40.4
1924	5.57	7.06	10.54	18.3	25.2	8.12	6.81	36.9	39.4
1925	5.88	10.46	11.45	19.2	26.1	8.85	7.70	38.5	40.7
1926	6.40	11.63	11.98	20.7	28.3	9.61	7.43	32.5	41.1
1927	6.67	10.21	11.36	20.7	27.5	10.16	7.26	30.7	42.3
December, 1926	6.42	10.97	10.92	19.8	47.6	9.44	6.95	30.1	45.5
July, 1927	7.13	8.58	11.44	19.9	20.7	9.82	7.16	30.7	40.3
August	7.21	9.24	11.15	19.7	23.4	10.37	7.13	31.2	40.3
September	7.42	9.78	11.14	19.4	29.4	10.78	7.06	31.2	41.7
October	7.55	10.16	11.22	19.7	35.6	11.04	7.05	30.9	43.4
November	8.00	8.99	11.42	19.4	41.6	10.67	7.42	31.1	44.5
December	8.32	8.14	11.39	19.2	43.3	10.71	7.38	32.0	45.7
	Index numbers, 1911–1914=100								
1915–1920	151.0	171.8	184.2	154.5	150.5	150.9	188.1	241.2	157.4
1921–1925	110.5	118.4	172.0	175.0	147.9	117.3	134.0	188.8	153.8
1920	171.8	191.6	226.6	216.1	220.0	169.8	191.7	230.0	216.3
1921	129.0	121.5	163.4	203.6	206.8	112.4	104.7	96.5	147.4
1922	98.9	115.5	135.9	172.3	133.2	110.6	134.2	175.3	140.6
1923	105.9	104.7	178.8	162.5	130.0	115.0	149.8	228.8	161.0
1924	106.3	100.7	183.0	163.4	132.6	116.8	153.4	217.1	157.0
1925	112.2	149.2	198.8	171.4	137.4	127.3	173.4	226.5	162.2
1926	122.1	165.9	208.0	184.8	148.9	138.3	167.3	191.2	163.7
1927	127.3	145.6	197.2	184.8	144.7	146.2	163.5	180.6	168.5
December, 1926	122.5	156.5	189.6	176.8	250.5	135.8	156.5	177.1	181.3
December, 1927	158.8	116.1	197.7	171.4	227.9	154.1	166.2	188.2	182.1

Source: Bureau of Agricultural Economics, Department of Agriculture.

There were considerable differences in the price movement of animals and animal products in 1927. (Table 16.) Of the nine kinds of animals and animal products included in the index, three increased in price, five declined, and one remained unchanged, in the market year 1926–27 (corresponding in some cases with the calendar year 1927), as compared with the preceding market year. Beef cattle prices increased 30 per cent between December, 1926, and December, 1927, and calves increased 13 per cent, while hog prices decreased 26 per cent.

Central Market Prices of Individual Agricultural Products.

Price indexes (not absolute prices) of a large number of individual farm products at typical central markets are shown in Chart VIII and Table 17. The calendar-year averages given, unlike the crop-year averages of farm prices above presented, are not weighted according to the quantities marketed at different times of the year, and this considerably lessens their statistical significance. In the case of some products 1913 was not a typical pre-war year, and the recent indexes would appear considerably higher or considerably lower if based on an average price of several years preceding the war. The figures are therefore more significant for comparison between recent individual years and months.

Table 17.—Index Numbers of Central Market Prices of Individual Agricultural Products

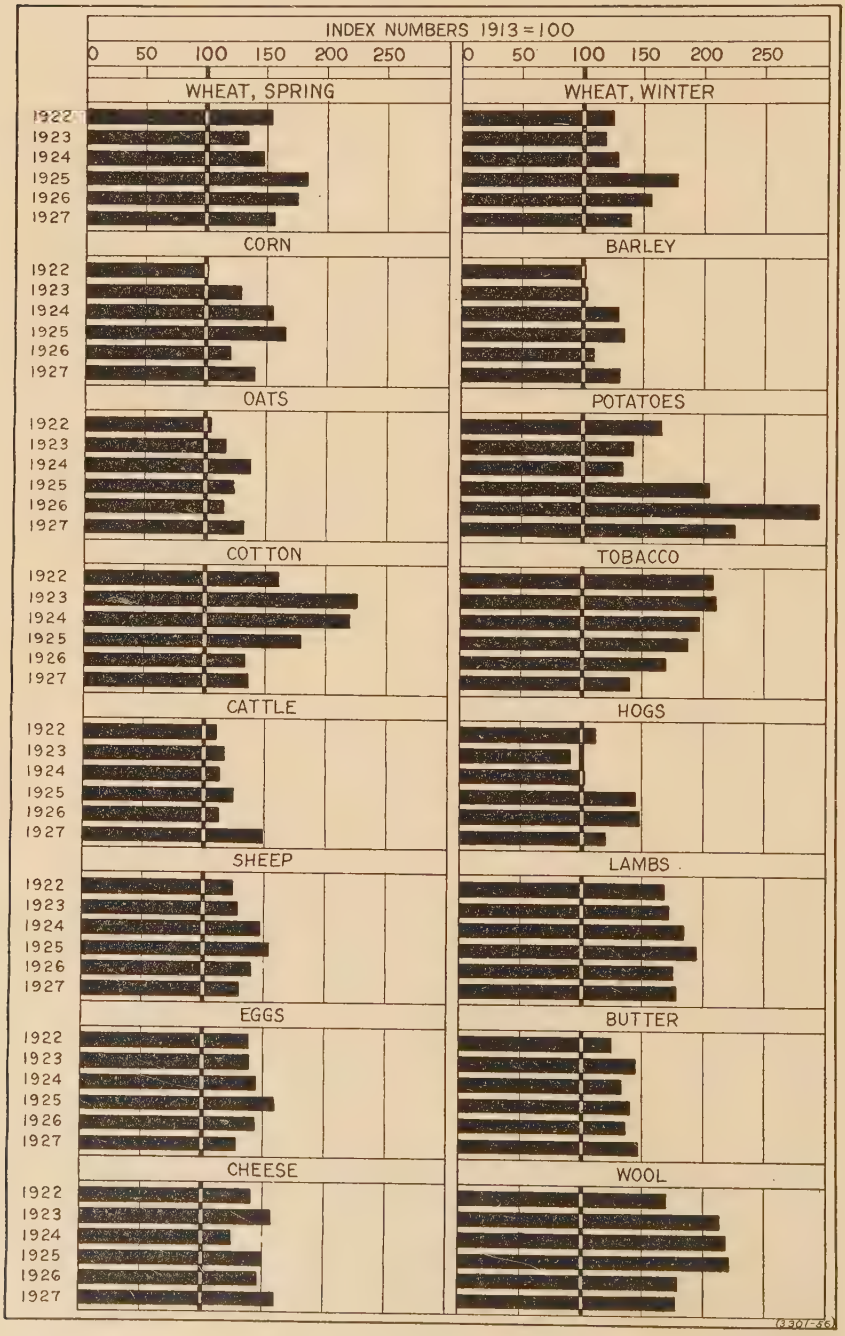
NOTE.—Based on 1913 as 100. Prices of grain (except spring wheat) and livestock at Chicago; other products, where distinguished, at market indicated.

Commodity	Calendar year average (unweighted)						December, 1926	1927			
	1922	1923	1924	1925	1926	1927		March	June	September	December
Wheat No. 1, northern spring, Minneapolis	154	135	148	184	177	157	163	156	167	151	146
Wheat, No. 2, red winter	126	119	130	179	156	140	142	136	147	133	140
Barley, malting	101	106	131	135	111	132	119	124	147	133	140
Corn, contract grades	100	131	155	166	121	141	121	117	160	158	139
Oats, contract grades	105	117	137	124	115	132	134	129	134	131	147
Rye, No. 2	139	118	144	177	150	164	152	157	180	153	171
Cotton, middling upland, New Orleans	161	226	220	181	133	136	96	112	129	169	151
Cottonseed, average price at gin	161	201	176	161	125	131	83	117	121	158	170
Flaxseed, Minneapolis	184	203	185	202	173	163	165	164	166	163	156
Hay, timothy, No. 1	143	148	155	147	147	121	139	128	122	110	112
Potatoes, white, good to choice, Chicago	165	142	134	206	294	226	221	185	361	189	164
Tobacco, Burley, good leaf, Louisville	208	210	197	188	170	140	159	159	128	129	129
Cattle, steers, good to choice	111	117	114	125	112	149	114	140	139	157	182
Hogs, heavy	112	92	102	146	148	121	141	132	104	130	103
Sheep, ewes, native, all grades	124	130	148	154	141	130	120	171	110	111	120
Lambs, western, medium to good [1]	169	173	184	195	176	178	155	193	170	174	167
Eggs, fresh, firsts, New York	139	139	146	160	143	128	193	101	93	138	182
Milk, fresh, New York	164	172	154	173	174	179	178	174	171	191	193
Wool, Ohio, grease basis, Boston (¼ and ⅜ grade)	171	214	218	222	181	177	179	175	171	179	190
Butter, creamery, extra New York	126	145	133	141	138	147	170	156	132	144	161
Cheese, whole milk, State, colored, average, New York	141	157	125	150	147	161	164	152	142	170	182

[1] For years 1922 to 1924 the grade was good to choice.

Source: Bureau of Labor Statistics, Department of Labor.

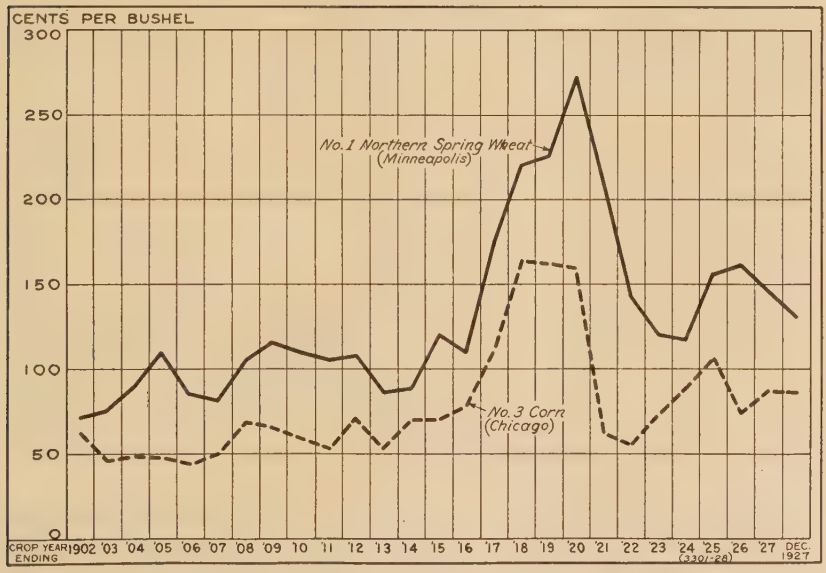
Chart VIII.—INDEXES OF CENTRAL MARKET PRICES OF PRINCIPAL FARM PRODUCTS



Among the products listed in Table 17 there were about an equal number of increases and decreases in 1927. Cattle had the largest increase, amounting to 33 per cent, while potatoes had the largest decline, 23 per cent. All but one of the products that showed an increased average price in 1927 as compared with 1926 also showed a higher price in December, 1927, than in December of the preceding year, but the extent of change varied considerably. Cottonseed prices more than doubled between December, 1926, and December, 1927, and prices of cattle and cotton increased by more than 50 per cent.

Tables 18 and 19, together with Charts IX and X, show the movements of central-market prices for cereals. The crop-year averages are weighted according to the normal volume of sales from month to month, while the calendar-year averages are not weighted. The basis of the quotation in some instances is different from that given

Chart IX.—PRICES OF WHEAT AND CORN AT CENTRAL MARKETS, BY CROP YEARS

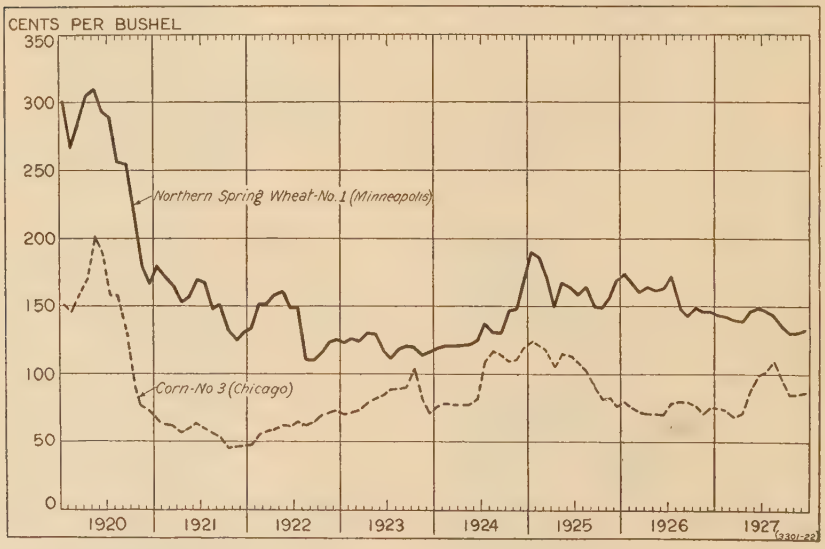


for the same commodity in the preceding table. The figures in Table 18 bring out clearly the marked advances in the prices of grains during the first decade of the present century, the more or less stationary position during the next five years, the great increase during the war and immediate postwar years, the violent subsequent fall, the marked upturn in the prices of all cereals for the crop year 1924–25, and the fluctuations which have occurred during the past two years.

The monthly changes in prices of wheat, corn, and oats since the postwar depression period of 1921 and 1922 are shown in Chart X

and Table 19. (See also section on wheat and flour.) Prices of all three grains advanced in the first half of 1922, but wheat prices dropped sharply after the harvest, while prices of oats continued to rise until April, 1923, and corn until October of that year. In the early part of 1924 there was another general advance which culminated in January, 1925, when prices of each of these grains were higher than at any other time since 1920. Grain prices receded sharply in February, March, and April of 1925, and quotations for corn and oats continued to show a downward trend until the summer of 1926, while wheat prices had wide fluctuations. After the harvest of 1926 prices of wheat and corn declined further, while prices of oats increased. There were marked gains in the prices of all the leading grains in the spring of 1927, but quotations for corn and wheat dropped sharply after the harvest. Prices of oats, on the other hand, had a further advance in the fall and in December were higher than in any month since January, 1925.

Chart X.—PRICES OF WHEAT AND CORN AT CENTRAL MARKETS, BY MONTHS



Wages of Farm Labor.

Wages of farm labor per month increased each year from 1922 to 1926, inclusive. The average per month in 1927 was slightly lower than in 1926, but was higher than in 1925. Comparing January, 1928, with January, 1927, all sections of the country showed a decline of wages per month with board, but in no case was the decrease large. Wages per month without board also decreased in all sections except the South Atlantic States and South Central States. Farm wages have some seasonal variation, being highest at harvest time and lowest

in the winter. Wages of farm labor may be compared with those of other classes of labor by reference to that part of the first section which concerns wages. (See p. 61 to 66.)

Table 18.—Central Market Prices of Cereals, by Crop Years and Calendar Years

NOTE.—All prices in cents per bushel, except flour, which is in dollars per barrel. The grades and markets covered are as follows: Wheat, No. 1 northern spring, Minneapolis; wheat, No. 2 red winter, Chicago; flour, spring patents, Minneapolis; rye, No. 2, Chicago; corn, No. 3 yellow, Chicago; oats, No. 3 white, Chicago; barley, No. 2, Minneapolis. Crop years are as follows: July 1–June 30, for wheat, flour, and rye; November 1–October 31, for corn; August 1–July 31, for oats and barley.

Period	Absolute prices							Index numbers, 1910–1914=100			
	Spring wheat	Winter wheat	Flour [1]	Rye	Corn	Oats	Barley	Spring wheat	Winter wheat	Corn	Oats
Weighted averages, crop year ending:											
1900–1904	75	[2] 77	([3])	([3])	47	33	([3])	76	78	77	83
1905–1909	100	[4] 88	([3])	([3])	55	40	([3])	101	89	90	100
1910–1914	99	99	4.97	76	61	40	64	100	100	100	100
1915–1920	187	177	9.49	150	124	61	106	189	179	203	153
1921–1925	149	144	8.13	107	77	44	67	151	145	126	110
1920	272	224	13.54	170	159	80	143	275	226	261	200
1921	207	223	10.51	162	62	51	74	209	225	102	128
1922	143	125	8.07	97	55	35	55	144	126	90	88
1923	120	114	6.89	81	73	41	58	121	115	120	103
1924	117	102	6.49	70	88	45	63	118	103	144	113
1925	156	158	8.67	125	106	50	84	158	160	174	125
1926	161	164	9.10	96	75	41	67	163	166	123	103
1927	146	138	8.12	101	87	43	71	147	139	143	108
December, 1927	132	[5] 134	7.37	109	86	54	83	133	135	141	135
Unweighted averages, calendar year:											
1910–1914	101	100	4.98	78	63	41	62	100	100	100	100
1920	260	251	13.16	185	142	80	124	257	251	225	195
1921	154	145	8.64	122	57	37	59	152	145	91	90
1922	136	124	7.55	88	62	38	57	135	124	98	93
1923	121	117	6.52	75	82	43	60	120	117	130	105
1924	132	137	7.36	92	96	50	76	131	137	152	122
1925	165	178	9.04	113	103	45	78	163	178	163	110
1926	158	155	8.80	96	75	41	64	156	155	119	100
1927	139	[5] 137	7.82	105	86	47	77	138	137	137	115

[1] Simple average.
[2] Average for the period ending 1901 to 1904.
[3] Not available.
[4] Average for the period ending 1907 to 1909.
[5] Quotation on No. 3 red winter, No. 2 not available.

Source: Bureau of Agricultural Economics, Department of Agriculture.

Table 19.—Central Market Prices of Corn and Oats, by Months

NOTE.—All prices in cents per bushel. Grades and markets the same as in Table 18. Minimum month of each year indicated by an asterisk (*); the maximum month by a dagger (†). For wheat prices by months see Table 32.

Month	Corn						Oats					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
January	*48	*70	*76	†124	79	74	34	43	*46	†58	42	46
February	55	72	78	122	75	73	36	44	48	53	41	*43
March	57	73	77	117	72	*68	36	45	47	48	40	44
April	58	79	77	105	71	71	38	†46	48	42	42	45
May	62	82	77	115	71	87	38	45	48	45	41	50
June	61	84	82	113	*70	99	37	43	51	49	40	49
July	64	88	109	108	78	102	36	40	54	44	42	45
August	62	88	117	102	†80	†109	*32	*38	50	41	*38	47
September	64	89	114	91	79	97	38	40	48	*39	*38	47
October	69	†104	110	82	77	84	42	43	50	*39	44	48
November	71	82	111	83	71	84	43	43	50	40	42	49
December	†73	71	†120	*76	75	86	†44	44	†58	42	†46	†54

Source: Bureau of Agricultural Economics, Department of Agriculture.

Table 20.—Average Yearly Farm Wage Rates

Year	Labor per month—		Labor per day—	
	With board	Without board	With board	Without board
1910	$19.58	$28.04	$1.07	$1.40
1913	21.27	30.21	1.15	1.48
1915	21.08	29.97	1.12	1.45
1917	28.64	40.19	1.56	2.00
1918	35.12	49.13	2.05	2.61
1919	40.14	56.77	2.44	3.10
1920	47.24	65.05	2.84	3.56
1921	30.25	43.58	1.66	2.17
1922	29.31	42.09	1.64	2.14
1923	33.09	46.74	1.91	2.45
1924	33.34	47.22	1.88	2.44
1925	33.88	47.80	1.89	2.46
1926	34.86	48.86	1.91	2.49
1927	34.58	48.63	1.90	2.46

Section	Labor per month—		Labor per day—	
	With board	Without board	With board	Without board
JANUARY, 1928				
United States	$32.50	$46.75	$1.76	$2.34
North Atlantic States	43.33	66.36	2.62	3.42
North Central States	36.38	50.81	2.12	2.81
South Atlantic States	25.40	36.36	1.31	1.74
South Central States	24.68	35.25	1.26	1.66
Western States	49.57	73.18	2.36	3.18

Source: Bureau of Agricultural Economics, Department of Agriculture.

AGRICULTURAL EXPORTS

Relative Importance and Geographic Distribution.

Agricultural products have at all times constituted a very large fraction of the total exports of the United States, though the proportion is much smaller at present than a half century ago and considerably smaller than at the beginning of the present century.

The actual value of agricultural products exported has increased many times in the last 75 years, but the ratio of agricultural exports to total exports has declined rather steadily. In 1927 (calendar year) the value of domestic exports of agricultural products was $1,885,000,000 out of a grand total of $4,758,000,000. The resulting ratio of 39.6 per cent was less than half as large as in the decade preceding the Civil War. The value of agricultural exports in the calendar year 1927 was about the same as in 1922 and lower than in any other postwar years except 1923 and 1926. The increase as compared with 1926 was the result of larger quantities exported, particularly in the case of cotton. Table 21 shows, since 1852, the value of agricultural exports by fiscal years, which correspond roughly to crop production years, while agricultural exports by calendar years are shown in Table 22.

Table 21.—Value of Domestic Exports of Agricultural Products

[In thousands of dollars]

Yearly average, years ending June 30—	Value	Per cent of all exports [1]
1852–1856	164,895	80.9
1857–1861	215,709	81.1
1862–1866	148,866	75.7
1867–1871	250,713	76.9
1872–1876	396,666	78.5
1877–1881	591,351	80.4
1882–1886	557,473	76.3
1887–1891	573,287	74.7
1892–1896	638,748	73.0
1897–1901	827,566	65.9
1902–1906	879,541	59.5
1907–1911	975,399	53.9

Yearly average or year, years ending June 30—	Value	Per cent of all exports [1]
1912–1916	1,256,452	45.1
1917–1921	2,862,005	42.7
1922–1926	1,951,522	45.9
1920	3,864,543	48.6
1921	2,609,555	40.9
1922	1,916,854	51.8
1923	1,799,812	46.3
1924	1,867,512	44.2
1925	2,281,028	47.7
1926	1,892,404	40.7
1927	1,908,594	39.2

[1] Based on total value of domestic exports.

Source: Bureau of Foreign and Domestic Commerce.

Europe has at all times been the principal market for American agricultural products. Before the war that continent took five-sixths of the total, and during recent years the proportion has ranged from three-fourths to four-fifths. The great bulk of the agricultural exports to Europe go to five densely populated industrial countries of northwestern Europe—the United Kingdom, France, Germany, Netherlands, and Belgium—though shipments to the Scandinavian countries and to Italy are also large. The proportion of our agricultural exports going to Europe, especially during recent years, is somewhat understated in the official statistics by reason of the fact that the considerable quantities of grain shipped from the United States to Canada are for the most part actually destined for European countries. (For distribution of agricultural exports by continents down to 1923, see Commerce Yearbook, 1924, p. 103.)

The United States is the most important source of the agricultural products imported into Europe. A calculation made with respect to the five countries first above named for the years 1920 to 1922, inclusive, shows that the United States furnished 68 per cent of the cotton imported by those countries, 67 per cent of the pork products, and 47 per cent of the wheat. The proportion of cotton remains more or less constant, but that of wheat varies greatly from year to year, and that of pork has declined since 1922.

Agricultural Exports, by Classes.

Table 22 presents, by calendar years, the value of agricultural exports classified into seven main groups. In 1927 cotton constituted 43.8 per cent of the total value of these exports; grains, 23.5 per cent; edible animals and products, 9.7 per cent; fruits, vegetables, and nuts, 7.6 per cent; tobacco, 7.4 per cent; dairy products and eggs, 1.3 per cent; and miscellaneous animal and vegetable products, 6.5 per cent. These proportions are considerably different from those of 1913, as exports of grain, tobacco, vegetables, fruits and nuts, and dairy products have shown particularly large percentage gains. Moreover, there has been considerable fluctuation in the relative importance of the different classes from year to year since the war, chiefly owing to variations in the wheat and cotton crops and to differences in price movements among the several commodities. The value of exports of grains and of cotton is much more variable from year to year than that of the other groups. Table 23 gives a more detailed grouping of agricultural exports. Some of the subgroups here shown include nonfood along with food products, whereas in the preceding table a complete segregation is made.

Quantitative Change in Agricultural Exports.

In order to eliminate the effect of the great fluctuations in prices upon the export statistics, indexes have been calculated showing the

changes in agricultural exports on the basis of constant prices, and also indexes showing average price changes. The method employed is the same as that used for determining quantity and price indexes of exports in general, more fully set forth in the section on Foreign Trade. (See p. 90.)

Table 22.—Value of Agricultural Exports (Domestic) of the United States, by Groups

[In millions and tenths of millions of dollars]

Calendar year	Total agricultural exports	Animals and products, edible	Dairy products and eggs	Grains and preparations	Vegetables, fruits, and nuts	Miscellaneous animal and vegetable products	Cotton	Tobacco	Total, excluding tobacco
1910–1914 (fiscal)	1,035.7	151.8	6.3	147.3	35.0	98.7	551.9	44.8	990.9
1913	1,143.3	158.8	6.9	197.4	40.5	111.2	575.5	52.9	1,090.4
1919	4,096.0	1,017.5	168.5	935.9	175.3	401.5	1,137.4	260.0	3,836.1
1920	3,452.3	472.8	96.7	1,085.9	117.9	296.9	1,136.4	245.5	3,206.7
1921	2,114.9	309.1	56.3	758.4	90.4	161.4	534.2	205.1	1,909.8
1922	1,884.4	262.2	34.9	516.0	93.6	158.1	673.3	146.5	1,737.9
1923	1,820.5	309.6	36.4	311.4	87.7	115.0	807.1	153.4	1,667.0
1924	2,110.1	275.5	35.7	433.8	117.1	133.3	950.6	164.1	1,945.9
1925	2,136.2	271.3	31.1	351.8	121.1	147.3	1,059.8	153.8	1,982.4
1926	1,816.7	238.2	26.8	355.7	132.6	112.1	814.4	136.9	1,679.8
1927	1,884.7	182.6	25.3	443.8	143.6	123.4	826.3	139.7	1,745.0

Source: Bureau of Foreign and Domestic Commerce.

Table 23.—Value of Domestic Exports of Principal Agricultural Products or Groups of Products

[In millions and tenths of millions of dollars; data except as stated are for calendar years]

Product	1910–1914 (fiscal)	1913	1919	1922	1923	1924	1925	1926	1927
Grand total [1]	**1,035.7**	**1,143.3**	**4,096.0**	**1,884.4**	**1,820.5**	**2,110.1**	**2,136.2**	**1,816.7**	**1,884.7**
Live animals	13.0	7.1	12.0	11.4	6.3	6.1	8.5	5.5	6.7
Meats	62.7	68.9	690.9	134.5	149.4	113.4	117.9	98.7	64.2
Eggs and dairy products	6.3	6.9	168.5	34.9	36.4	35.7	31.1	26.8	25.3
Animal fats and oils	83.8	90.6	326.3	118.2	158.5	159.0	150.3	136.2	116.8
Hides and skins	3.2	3.0	10.9	4.0	4.9	12.8	12.0	10.8	11.5
Bread grains [2]	107.6	154.0	727.1	339.8	236.1	371.5	275.2	300.5	367.9
Coarse grains	36.8	40.0	165.2	159.8	61.1	54.5	72.7	50.0	63.8
Rice	.6	.9	34.8	15.5	12.9	7.0	3.3	4.9	11.8
Fodders and feeds	29.4	34.7	38.1	22.4	21.7	29.4	33.8	28.2	32.9
Vegetables	5.8	5.9	45.8	15.3	16.4	16.8	16.2	17.8	18.7
Fruits	28.0	32.9	122.7	74.4	67.5	96.5	100.7	110.3	120.2
Vegetable oils (expressed), oilseeds, and nuts	21.2	22.0	102.1	15.8	11.9	10.9	14.1	11.0	13.4
Coffee and substitutes	7.3	8.8	8.8	5.5	5.7	7.5	8.0	9.2	6.3
Sugar and related products	9.5	8.5	143.4	77.3	36.1	32.8	36.1	14.6	17.3
Seeds, except oilseeds	2.6	2.6	8.3	4.4	3.3	3.3	3.5	4.0	3.6
Tobacco	44.8	52.9	260.0	146.5	153.4	164.1	153.8	136.9	139.7
Cotton	551.9	575.5	1,137.4	673.3	807.1	950.6	1,059.8	814.4	826.3
Wool and hair	1.3	1.3	3.8	1.2	1.5	1.9	2.4	2.0	2.7

[1] Totals include various minor items not shown separately.
[2] Includes wheat and rye; also flour and flour products.
Source: Bureau of Foreign and Domestic Commerce.

The indexes as presented in Table 24, show the ratio of the agricultural exports in each year to the figures for the next preceding year taken as 100, and in addition show the ratio of the figures for

1926 and 1927 to the pre-war figure. The quantity of agricultural exports in 1919 was 54 per cent higher than for the pre-war period (i. e., the index stood at 154). There was a 20 per cent decrease in 1920, which has been followed by a fluctuating movement. In 1927 the index of the quantity exported was 6 per cent higher than in 1926 and 29 per cent larger than the average of 1910–1914. Between 1926 and 1927 there were considerable variations in the volume of trade in individual commodities. The only substantial decline in quantity of exports was shown by animal products, while there were large increases in the exports of grains and vegetables, fruits and nuts, and smaller increases in tobacco and cotton.

Table 24.—Agricultural Export Indexes:[1] Quantity, Price, and Value

Ratio of year ended Dec. 31	Total agricultural exports			Animals and products, edible			Dairy products and eggs			Grains and preparations		
	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
1919 to 1910–1914	154	256	395	263	255	670	1,342	200	2,682	263	241	635
1920 to 1919	80	105	84	59	79	46	53	108	57	107	109	116
1921 to 1920	109	56	61	104	63	65	70	83	58	123	57	70
1922 to 1921	90	99	89	90	94	85	75	83	62	81	84	68
1923 to 1922	85	114	97	125	95	118	94	111	104	60	100	60
1924 to 1923	118	99	116	88	101	89	102	96	98	120	116	139
1925 to 1924	99	102	101	76	130	98	79	110	87	68	119	81
1926 to 1925	104	82	85	89	98	88	86	100	86	117	86	101
1927 to 1926	106	97	104	86	88	77	94	99	94	126	99	125
1926 to 1910–1914	120	147	175	105	149	157	279	153	426	166	146	242
1927 to 1910–1914	129	141	182	92	131	120	267	151	402	210	143	301

Ratio of year ended Dec. 31	Vegetables, fruits, and nuts			Cotton			Tobacco		
	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
1919 to 1910–1914	236	213	501	76	270	206	197	294	580
1920 to 1919	62	109	67	94	106	100	61	155	94
1921 to 1920	105	73	77	104	45	47	110	76	84
1922 to 1921	104	99	104	94	134	126	84	85	71
1923 to 1922	107	88	94	87	137	120	111	95	105
1924 to 1923	141	94	134	126	93	118	120	89	107
1925 to 1924	92	112	103	126	88	111	91	103	94
1926 to 1925	115	95	110	107	72	77	101	88	89
1927 to 1926	115	94	108	102	99	101	105	97	102
1926 to 1910–1914	255	148	379	106	139	148	123	248	306
1927 to 1910–1914	295	139	410	111	135	150	130	239	312

[1] This table is compiled on a different basis from other tables of indexes, showing in most cases the ratio of a specified year to the year preceding (taken as 100), instead of showing the ratio of each postwar year to a common basic pre-war year or pre-war average.

Source: Bureau of Foreign and Domestic Commerce.

Prices of Agricultural Exports.

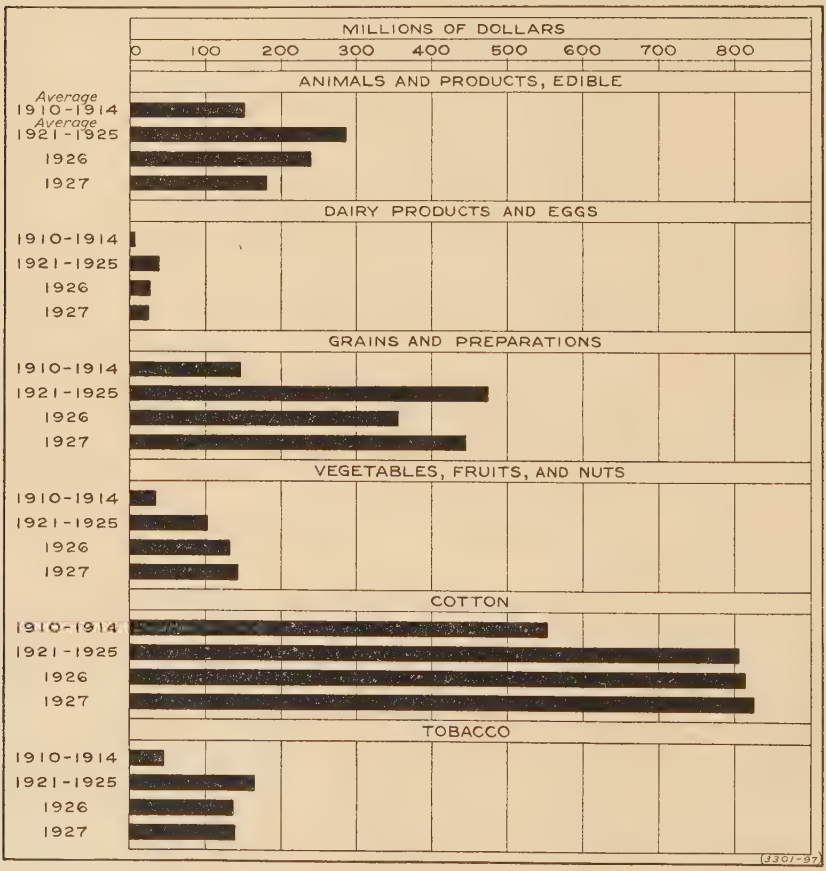
The same calculation from which quantity indexes of agricultural exports are derived gives indexes of the changes in prices of agricultural exports. In substance these represent percentages of change in the prices of the several individual commodities combined into a

weighted average, giving due regard to the relative importance of the various commodities. (Table 24.)

Prices of agricultural exports in 1919 were 156 per cent above pre-war levels (i. e., index of 256). In 1920 they rose 5 per cent. The index fell precipitously in 1921 to a point only a little over one-half as high as the year before and remained substantially unchanged in

Chart XI.—AGRICULTURAL EXPORTS, BY CLASSES—ACTUAL VALUES

NOTE.—Figures for 1910–1914 average are for fiscal years, calendar years thereafter.



1922, the decline in grains, dairy products, animal products, and tobacco being offset by the advance in the price of cotton. The export price index rose by 14 per cent in 1923, owing to a further large increase in the price of cotton and dairy products, remained approximately unchanged during the next two years, and in 1926 decreased by 18 per cent. In 1927 it decreased 3 per cent as compared with 1926, owing principally to a decline in the price of animals and animal products. All of the groups of agricultural exports decreased in price during 1927, but most of the declines were relatively small.

Tobacco Exports.

While figures relating to tobacco exports are misleading, they have been included in Table 24. The reason is that until very recent years no classification of tobacco exports according to type was made. It is generally known that a marked shift has taken place in the character of tobacco exported; the cigarette types, which are of much higher average value per pound than most others, have become relatively far more important than before. As a consequence an average unit value for tobacco, obtained simply by dividing the aggregate value by the aggregate quantity, shows an increase per pound as compared with pre-war years far greater than the actual advance in the price of tobacco of a given grade. Conversely, the increase in the aggregate weight of tobacco exported materially understates the true gain in the importance of tobacco exports from the quantitative standpoint. In most recent years the actual quantity of tobacco exported has been considerably higher than before the war, quite apart from the fact that the average quality has also risen.

Exports of Cereals.

Table 25 presents comparative export statistics for individual cereals. The figures are for calendar years, and therefore bring out the effect of changes in supply and demand less clearly than crop-year data.

Table 25.—Domestic Exports of Cereals, by Calendar Years

NOTE.—Wheat flour converted to grain equivalent on basis of 4.7 bushels to the barrel for 1926 and 1927, earlier years on basis of 4½ bushels to the barrel. Figures for corn and rye include grain equivalent of flour and meal made from these grains. Barley figures cover grain only.

Calendar year	Quantity (thousands of bushels)					
	Wheat grain	Wheat flour [1]	Wheat and flour	Corn	Rye	Barley
1910–1914 [2]	56,913	10,679	104,967	41,409	888	7,896
1921–1925	159,222	15,049	226,942	75,452	35,128	24,850
1920	218,287	19,854	307,630	21,230	59,253	17,854
1921	280,058	16,801	355,661	132,186	30,146	25,834
1922	164,692	15,025	232,302	166,131	47,600	18,781
1923	98,533	16,310	171,928	44,685	32,016	11,983
1924	166,302	15,990	238,256	20,106	36,981	20,712
1925	86,526	11,119	136,561	14,154	28,895	29,059
1926	138,275	11,850	193,971	25,130	12,035	13,586
1927	168,307	12,823	228,576	14,978	36,172	37,973
Per cent change:						
1921–1925 from 1910–1914	+179.8	+40.9	+116.2	+82.2	+3,855.9	+214.7
1927 from 1926	+21.7	+8.2	+17.8	−40.4	+200.6	+179.5
	Value (thousands of dollars)					
1910–1914 [2]	55,063	51,127	106,190	26,582	620	5,073
1921–1925	228,342	93,522	321,864	57,884	39,475	18,792
1920	596,975	224,472	821,447	33,932	125,878	27,165
1921	433,053	117,698	550,751	96,461	44,589	20,687
1922	206,338	85,483	291,821	117,211	46,075	13,749
1923	116,490	88,151	204,641	39,433	29,021	9,322
1924	237,114	91,210	328,324	20,052	40,204	23,273
1925	148,717	85,067	233,784	16,263	37,484	26,930
1926	201,739	83,133	284,872	22,339	12,379	10,371
1927	239,504	85,332	324,836	13,304	39,911	35,432
Per cent change:						
1921–1925 from 1910–1914	+314.7	+82.9	+203.1	+117.8	+6,266.9	+270.4
1927 and 1926	+18.7	+2.6	+14.0	−40.4	+222.4	+241.6

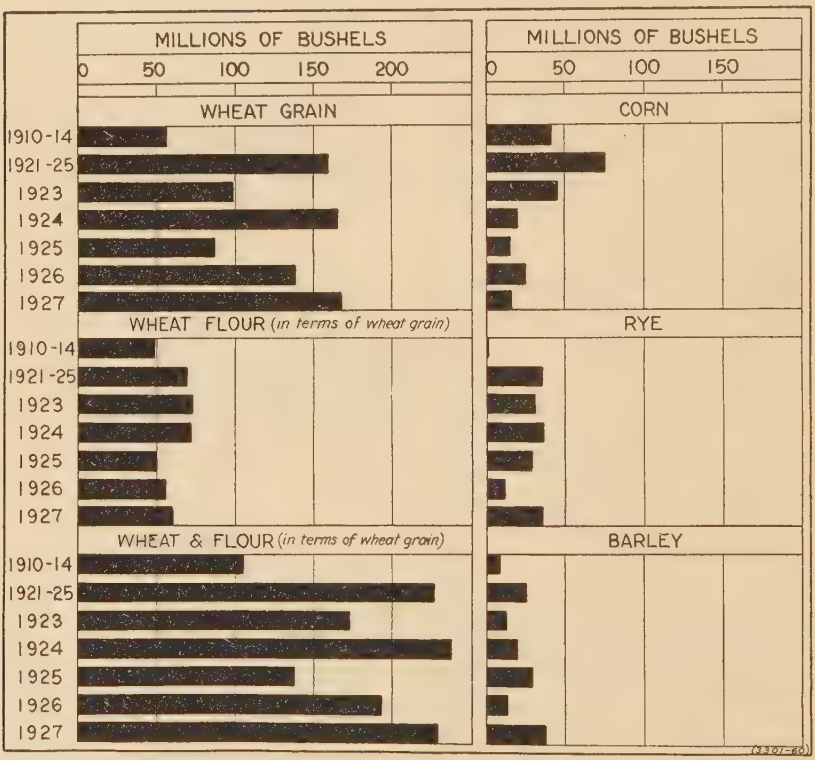
[1] Thousands of barrels. [2] Fiscal years.

Source: Bureau of Foreign and Domestic Commerce.

On the average, from 1921 to 1925 exports of all the major grains were much greater than in the immediate pre-war period, those of wheat and flour having more than doubled, those of barley having trebled, and those of rye having multiplied almost fortyfold. Corn exports in each of the last four years have been lower than before the war. The quantities of rye and barley shipped in 1927 were about

Chart XII.—EXPORTS OF PRINCIPAL CEREALS

NOTE.—Figures for 1910–1914 average are for fiscal years, calendar years thereafter. See headnote, Table 25.



three times as large as in 1926, while shipments of corn were little more than one-half as large.

The quarterly figures for cereal exports during the past three years showed great variations, partly of a seasonal character and partly owing to sharp changes in harvests and conditions of supply and demand. (Table 26.) Exports of wheat and wheat flour were larger in the first half of 1927 than in the first half of 1926 but smaller than in the first half of 1925. For the last six months of the year, however, the shipments were larger than for either 1925 or 1926. Corn exports were smaller in the first six months of 1927 than in the first half of 1926, but were larger than during the corresponding period of 1925.

During the second half of 1927 corn exports were considerably smaller than in either 1925 or 1926. Rye and barley exports in each quarter of 1927 were much larger than in 1926.

Table 26.—Domestic Exports of Cereals, by Quarters

[See headnote, Table 25]

Year and quarter	Quantity (thousands of bushels)					
	Wheat grain	Wheat flour [1]	Wheat and flour	Corn	Rye	Barley
1925						
January–March	25,832	3,310	40,728	2,495	4,559	3,280
April–June	25,363	2,465	36,455	2,796	18,169	3,209
July–September	22,586	2,450	33,613	2,933	5,884	16,105
October–December	12,745	2,893	25,765	5,930	283	6,464
1926						
January–March	7 882	2,018	17,368	10,013	751	1,530
April–June	19,975	2,180	30,220	5,907	5,729	3,081
July–September	68,866	3,715	86,329	3,574	4,643	5,577
October–December	41,551	3,937	60,054	5,636	913	3,398
1927						
January–March	18,051	2,755	31,001	6,220	2,181	4,395
April–June	27,782	2,977	41,776	4,389	13,961	3,674
July–September	65,590	3,120	80,252	1,764	9,407	13,062
October–December	56,885	3,971	75,547	2,605	10,623	16,842

[1] Thousands of barrels.

Source: Bureau of Foreign and Domestic Commerce.

In order to compare the export of grain with domestic production, it is necessary to consider exports by crop years rather than by calendar years and also to deduct imports. (Table 27.)

Table 27.—Net Exports of Major Cereals: Grain and Grain Equivalent of Flour, Meal, and Malt

Yearly average or year beginning July 1—	Net exports [1] (thousands of bushels)						Per cent of domestic production				
	Total, 5 grains	Wheat	Corn	Oats	Barley	Rye	Wheat	Corn	Oats	Barley	Rye
1910–1913	155,221	103,159	38,744	4,303	8,127	888	14.9	1.4	0.4	4.4	2.5
1920	455,455	308,681	65,162	5,595	28,682	47,337	37.1	2.0	.4	15.1	78.3
1921	519,589	262,155	179,366	19,503	28,621	29,944	32.2	5.8	1.8	18.5	48.6
1922	397,227	201,293	96,462	25,120	22,689	51,663	23.3	3.3	2.1	12.5	50.0
1923	190,228	128,383	22,907	4,552	14,482	19,902	16.1	.8	.4	7.3	31.6
1924	299,277	251,824	5,174	13,736	28,543	50,242	29.1	.2	.9	15.7	76.7
1925	199,100	92,356	24,146	39,501	30,448	12,649	13.7	.8	2.7	14.1	27.2
1926	280,911	205,897	18,721	14,942	19,655	21,697	25.1	.7	1.2	10.6	53.2
July 1 to Dec. 31—											
1926	167,031	135,502	8,354	7,278	10,342	5,555	------	------	------	------	------
1927	206,078	147,931	[3] 847	6,001	31,269	20,030	------	------	------	------	------

[1] Exports are for 12 months beginning July 1 of year specified. Net exports represent domestic exports minus imports. Wheat flour converted to grain on basis of 4.7 bushels to the barrel for years 1925 and 1926 and July 1 to Dec. 31, 1926, and 1927, other years on basis of 4.5 bushels to the barrel.

[2] Based on Department of Agriculture estimates of production.

[3] Excess imports over exports.

Source: Bureau of Foreign and Domestic Commerce.

The total net exportation of the five principal grains from the crops of 1910 to 1913 averaged 155,000,000 bushels annually. The average for postwar years is conspicuously higher than for this pre-war period,

but the exports of the years 1923–24 and 1925–26, while somewhat higher than the pre-war average, were much lower than in other recent years. In each of those two years exports of the five principal grains amounted only to little less than 200,000,000 bushels. The great decline in the wheat and rye production of 1925 accounted mainly for the decrease in cereal exports during 1925–26. Wheat exports were about one-seventh of our total wheat production in the years immediately preceding the war, while in 1926–27 they constituted about one-quarter of the total output. The exportation of corn is small compared with the production, the importance of that crop as contributing to our agricultural exports being reflected rather in the shipments of pork products, as a large fraction of the corn crop is fed to hogs. A very great proportion of the rye crop, on the other hand, is exported.

For reasons already stated, Table 28, showing the destination of cereal exports (for destination of wheat and flour exports see Table 33), is more or less misleading because of indirect shipments through Canada. The United Kingdom and Germany are the principal markets for barley; Germany is the most important ultimate market for rye, while the exports of corn—much reduced during the last four years—are now rather widely distributed among the countries of Europe and Latin America.

Table 28.—Domestic Exports of Barley, Rye, Corn, and Products, by Principal Countries of Destination

NOTE.—Quantity in thousands; grain and malt, bushels; flour and corn meal, barrels; hominy and grits and other corn preparations for table use, pounds; calendar years.

Commodity and country	1924	1925	1926	1927	Commodity and country	1924	1925	1926	1927
Barley	20,712	29,059	13,586	37,973	Rye flour	219	37	16	38
United Kingdom	[1] 11,193	10,753	8,183	11,705					
Germany	4,756	6,538	1,205	10,315	Corn	18,366	12,762	23,064	13,428
Canada	703	5,477	2,004	10,600	Europe	8,834	2,029	6,628	2,512
					United Kingdom	[1] 3,970	808	2,117	881
Malt	3,946	4,704	3,316	2,869	Denmark	775	269	773	609
					Germany	698	224	520	310
Rye	35,666	28,675	11,941	35,941	Netherlands	2,218	719	2,855	589
Europe	12,004	19,277	3,744	9,933	Canada [2]	6,031	5,759	9,585	7,952
United Kingdom	[1] 142	257	314	3,418	Mexico	789	2,413	4,212	1,058
Denmark	591	559	522	628	Cuba	2,456	2,233	1,954	1,631
Germany	4,290	6,175	588	1,918					
Netherlands	2,685	3,189	810	2,088	Corn meal	435	348	516	387
Norway	1,882	2,206	1,215	700	Hominy and grits	29,893	20,055	30,141	23,145
Canada [2]	23,661	9,394	8,175	25,996	Other corn preparations for table use	6,953	7,923	10,367	7,950

[1] Includes Irish Free State.

[2] For the most part in transit for Europe.

Source: Bureau of Foreign and Domestic Commerce.

WHEAT AND FLOUR

SUMMARY.—Wheat acreage, which declined from 1919 to 1925, increased in each of the last two years. The total area planted to wheat in 1927 was 58,583,000 acres, which was 12 per cent greater than in 1925, but 23 per cent less than the maximum acreage of 1919. The average yield per acre, 14.9 bushels, was also slightly larger than in 1926. As a result of the larger acreage and higher yield the wheat crop for the year 1927 amounted to 872,000,000 bushels, which was an increase of 5 per cent over the previous year and of 8 per cent over the average for the years 1921–1925. The estimated farm value as of December 1 was 2 per cent less than that of the 1926 crop, in spite of the increase in production, as the farm price was only $1.12 per bushel as compared with $1.20 a year earlier. Exports of wheat and flour during the first nine months of the crop year 1927–28 were larger than in the corresponding periods of the two preceding years.

Table 29.—Acreage, Production, and Exports of Wheat

NOTE.—Exports include flour in terms of grain, and are for 12 months beginning July 1 of year specified. Wheat flour in 1926 and 1927 converted to grain on the basis of 1 barrel of flour equals 4.7 bushels of grain, while in earlier years the factor was 1 barrel of flour equaled 4.5 bushels of grain.

Yearly average or year	Area	Production	Farm value, Dec. 1	Yield per acre	Farm price, Dec. 1	Exports (domestic)	
						Quantity	Per cent of crop
	1,000 acres	*1,000 bushels*	*1,000 dollars*	*Bushels*	*Cents per bushel*	*1,000 bushels*	
1866–1875	20,470	244,672	257,587	12.0	105.3	50,535	20.7
1876–1885	34,433	425,054	391,104	12.3	92.0	127,469	30.0
1886–1895	37,500	476,788	321,071	12.7	67.3	143,076	30.0
1896–1900	48,989	633,074	415,922	12.9	65.7	197,427	31.2
1901–1905	50,194	700,220	501,277	14.0	71.6	140,026	20.0
1906–1910	45,766	674,993	579,535	14.7	85.9	116,138	17.2
1911–1915	51,910	806,361	705,890	15.5	87.5	188,748	23.4
1916–1920	58,685	799,083	1,491,445	13.6	186.6	241,899	30.3
1921–1925	58,092	804,151	889,049	13.8	110.6	204,382	25.4
1919	75,694	967,979	2,080,056	12.8	214.9	219,865	22.7
1920	61,143	833,027	1,197,263	13.6	143.7	366,077	43.9
1921	63,696	814,905	754,834	12.8	92.6	279,407	34.3
1922	62,317	867,598	873,412	13.9	100.7	221,923	25.6
1923	59,659	797,394	736,006	13.4	92.3	156,430	19.6
1924	52,535	864,428	1,123,086	16.5	129.9	258,024	29.8
1925	52,255	676,429	957,907	12.9	141.6	108,036	16.0
1926	56,337	831,040	995,954	14.8	119.8	219,160	26.4
1927	58,583	871,691	974,694	14.9	111.8	[1] 181,839	[2]
Per cent change 1927 from:							
1909–1913	+24.4	+26.3	+64.7	+1.4	+30.5		
1926	+4.0	+4.9	−2.1	+.7	−6.7		

[1] Total for 9 months ending March, 1928; corresponding figures for 1927, 177,383,886 bushels.
[2] Not available.

Sources: Bureau of Agricultural Economics, Department of Agriculture; exports from Bureau of Foreign and Domestic Commerce, Department of Commerce.

Acreage and Production of Wheat.

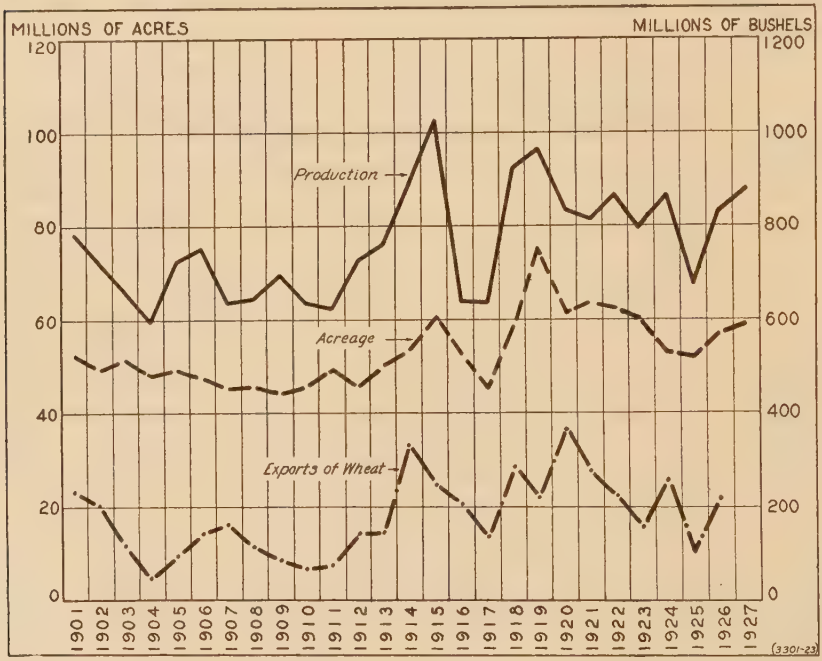
The value of the exports of wheat and wheat products usually constitutes more than one-half of the total value of all grains and grain products exported. This is significant in view of the fact that the acreage devoted to wheat is only about one-fourth of the total for all grains, and the production of wheat is not usually more than one-fifth of the total for all cereal crops. In the years prior to 1850 corn was considerably more important than wheat in our foreign

trade. In almost every year since that time exports of wheat have surpassed those of corn in both quantity and value. Corn, however, continues to be the most important cereal crop of the United States with an average output almost four times as great as wheat and a farm value about twice as great. Wheat ranks second of our cereal crops according to farm value.

The land area devoted to wheat in 1927 was 26 per cent of the acreage in all cereal crops and the production represented 16 per

CHART XIII.—WHEAT: ACREAGE, PRODUCTION, AND EXPORTS

NOTE.—Exports are for 12 months beginning July 1 of year specified.



cent of the total production of these crops. The number of acres planted to wheat in 1927 was 58,583,000 and the production was 871,691,000 bushels which were an increase over 1926 of 4 per cent and 4.9 per cent, respectively. The yield per acre was 14.9 bushels, which was slightly higher than in 1926 and also higher than in any other recent year except 1924.

Flour Production and Consumption.

Flour milling is one of the most important food industries of the United States, having been developed far beyond our domestic requirements and playing a leading part in our export trade. Commercial estimates show that the average annual output of flour mills is only about 50 per cent of their capacity. The total value of

products of flour mills according to the census of 1925 was $1,298,000,000, placing it among the leading manufacturing industries of the United States. Similar data for 1927 are not available.

Table 30 shows that the total value of flour production increased 24 per cent in 1925 as compared with 1923. About seven-eighths of the value of products in 1925 were represented by cost of materials. The number of flour mills has shown a decrease every year since 1914, the tendency being constantly toward fewer but larger establishments.

The total grain ground decreased 5 per cent from 1923 to 1925. The total output in 1925 represented 707,958,000 bushels of grain, distributed as follows: Wheat, 75 per cent; corn, 15 per cent; oats, 6 per cent; all other, 4 per cent.

Table 30.—Flour Milling Industry

Item	Merchant and custom mills, 1889	Merchant mills						
		1899 [1]	1909	1914	1919	1921 [2]	1923 [2]	1925 [2]
Number of mills	18,470	9,476	11,691	10,788	10,708	6,485	5,232	4,413
Wage earners (average number)	47,403	32,226	39,453	39,718	45,481	35,378	35,194	31,988
Horsepower	752,365	[3] 670,719	850,284	821,406	875,464	([4])	709,856	669,910
	In thousands of dollars							
Cost of all materials	434,152	428,117	767,576	752,270	1,799,181	993,810	885,972	1,125,379
Value of products	513,971	501,396	883,584	877,680	2,052,434	1,179,740	1,048,577	1,298,015
Value added by manufacture	79,819	73,280	116,008	125,410	253,253	185,930	162,606	172,636
GRAIN GROUND	In thousands of bushels							
Total	627,016	729,062	806,248	818,929	830,026	713,593	743,235	707,958
Wheat	385,750	471,307	496,480	545,728	612,562	521,234	538,312	530,593
Corn	166,293	180,573	209,281	180,116	113,761	122,168	125,194	105,355
Rye	12,140	10,088	11,504	12,814	15,952	7,708	9,246	8,126
Buckwheat	7,032	5,490	7,156	5,478	4,765	3,686	2,938	2,408
Barley	8,696	10,067	24,510	20,288	21,151	([5])	([5])	([5])
Oats	47,104	47,176	50,242	50,227	58,580	41,080	49,310	45,818
Other grains		4,360	7,075	4,278	3,255	17,718	18,235	15,658
PRODUCT	In thousands of barrels (196 pounds per barrel)							
Wheat flour	80,949	99,764	105,757	116,404	132,466	110,846	114,439	114,690
Corn meal and flour	36,898	27,839	21,553	16,328	10,683	10,932	12,155	9,709
Rye flour	2,137	1,443	1,532	1,937	2,528	1,335	1,635	1,598
Buckwheat flour	921	731	898	641	460	334	251	244

[1] For merchant and custom mills together, in 1899, the value of products was $560,719,000; merchant mills representing 89 per cent of the total, a proportion which has undoubtedly risen since that time.

[2] Excludes data for establishments reporting products under $5,000 in value; this change in basis in part accounts for the decline in the number of mills and of wage earners, but has relatively little effect on the comparability of the other data.

[3] Figures are not strictly comparable with later years because of the inclusion in this year and the exclusion in later years of data for rented power other than electric.

[4] Data not available.

[5] Included in other grains.

Source: Bureau of the Census.

Estimates of flour production in the United States are issued by several trade publications and often show wide variations from the figures of the Bureau of the Census, as they include data of establishments not classified as flour mills by the Bureau of the Census. Table 31 gives production of flour from 1879 to date and includes census figures in so far as available. Where no official data can be had private estimates are given. Flour production has been fairly steady and showed a gradual increase each year from 1921 to 1924, when it reached the highest point since 1919. Since 1924 the production has fluctuated and in 1927 decreased to 117,028,000 barrels, representing approximately 550,000,000 bushels of wheat ground.

Table 31.—Wheat Flour: Estimated Production and Consumption

[In thousands of barrels, except per capita consumption, which is in pounds]

Year	Production [1]	Imports	Exports			Available for consumption [2]	
			Total	To foreign countries	To Alaska, Hawaii, and Porto Rico	Total	Per capita
1879	62,840	15	6,125	[3]	[3]	56,730	226.4
1889	80,949	1	10,451	[3]	[3]	70,499	223.9
1899	103,524	1	18,717	[3]	[3]	84,808	222.2
1904	105,365	26	11,882	11,543	349	93,509	221.9
1909	107,108	113	10,192	9,688	504	97,029	209.7
1914	117,704	79	13,284	12,769	515	104,499	209.1
1919	133,671	17	29,816	26,450	611	103,872	195.4
1921	111,946	966	17,313	16,801	512	95,599	172.8
1922	114,132	694	15,611	15,025	586	99,215	176.6
1923	115,439	268	16,920	16,310	610	98,787	173.5
1924	122,280	65	16,585	15,990	595	105,759	182.7
1925	115,690	11	11,703	11,119	584	103,998	177.0
1926	120,280	10	12,447	11,850	597	107,843	180.7
1927	117,028	5	13,427	12,826	601	103,606	171.5

[1] Includes estimated output from custom mills, ranging since 1914 from 1,300,000 to 1,000,000 barrels.
[2] No account taken of stocks at beginning and at end of year; however, the fluctuations in stocks would hardly affect the per capita consumption to any appreciable extent.
[3] Not available.

Sources: United States Grain Corporation; Northwestern Miller; Russell's Commercial Review; Bureau of Foreign and Domestic Commerce and Bureau of the Census, Department of Commerce.

Per capita consumption of flour declined from 226 pounds in 1879 to 171 pounds in 1927. This gradual decline in per capita consumption of flour is accounted for by the fact that a higher standard of living has resulted in a demand for a greater variety of foods.

Flour exports to foreign countries and noncontiguous territories of the United States, which were on the decline from 1919 to 1925, inclusive, have recently shown an upward trend, with an increase of 744,000 barrels in 1926 and a further expansion of 980,000 barrels in 1927.

Prices and Market Conditions.

Table 32 shows monthly prices of wheat and flour from 1922 to 1927, inclusive. It will be noted that prices for 1927, on the whole, were considerably under the level of either 1925 or 1926 and reached

the lowest point in September, but generally prices are somewhat higher in the first half of the year than in the second half, owing to the fact that the new crop begins to come into the market in July. Wheat prices are much affected by foreign conditions of supply and demand, as the United States normally has an exportable surplus of over 200,000,000 bushels, which has to meet the competition of other surplus countries, such as Canada, Argentina, and Australia.

Table 32.—Central Market Prices of Wheat and Flour

NOTE.—The grades and markets covered are as follows: Wheat, No. 1 northern spring, Minneapolis; wheat, No. 2 red winter, Chicago; flour, spring patent, Minneapolis.

Month	Spring wheat (per bushel)						Winter wheat (per bushel)					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
January	$1.34	$1.23	$1.19	$1.89	$1.73	$1.43	$1.21	$1.30	$1.13	$1.95	$1.88	$1.37
February	1.51	1.26	1.21	1.87	1.67	1.42	1.34	1.35	1.13	2.00	1.83	1.36
March	1.51	1.24	1.21	1.71	1.61	1.39	[1] 1.38	1.31	1.09	1.91	1.71	1.33
April	1.58	1.30	1.21	1.50	1.64	1.38	1.40	1.32	1.06	1.66	1.68	1.34
May	1.61	1.28	1.22	1.67	1.62	1.47	1.34	1.28	1.07	1.89	1.65	1.45
June	1.49	1.17	1.25	1.64	1.63	1.49	1.18	1.16	1.15	1.87	1.48	1.45
July	1.49	1.12	1.37	1.59	1.72	1.47	1.14	1.00	1.29	1.59	1.45	1.39
August	1.11	1.18	1.31	1.64	1.49	1.43	1.07	1.00	1.31	1.68	1.37	1.38
September	1.10	1.21	1.30	1.50	1.43	1.34	1.06	1.05	1.31	1.67	1.34	1.32
October	1.15	1.20	1.46	1.49	1.49	1.29	1.18	1.11	1.53	1.63	1.39	1.35
November	1.23	1.14	1.48	1.55	1.46	1.30	1.27	1.06	1.55	1.70	1.38	1.35
December	1.25	1.16	1.66	1.69	1.46	1.32	1.33	1.09	1.80	1.80	1.40	[2] 1.34

Month	Flour (per barrel)					Month	Flour (per barrel)				
	1923	1924	1925	1926	1927		1923	1924	1925	1926	1927
January	$6.71	$6.44	$9.80	$9.85	$7.95	July	$6.21	$7.72	$8.78	$9.27	$8.26
February	6.72	6.51	10.02	9.46	7.85	August	6.37	7.69	9.40	8.50	7.98
March	6.72	6.49	9.34	9.19	7.74	September	6.45	7.52	8.52	7.87	7.52
April	7.00	6.56	8.54	9.20	7.75	October	6.43	8.19	8.52	8.08	7.43
May	6.80	6.83	9.12	9.00	8.23	November	6.21	8.22	8.81	7.85	7.38
June	6.35	7.12	8.86	9.32	8.39	December	6.30	9.03	9.52	8.02	7.37

[1] Based on small number of sales. [2] Red Winter No. 3; no quotation for No. 2.

Source: Bureau of Agricultural Economics, Department of Agriculture.

The year 1927 was a banner year in world wheat production. Not only was the United States crop above normal, but both Canada and Argentina, the two principal competitors of the United States in world markets, had unusually large crops, which resulted in a low price level for the year. (There is a discussion of monthly movements of grain prices on page 193.) The price of flour showed movements more or less parallel to those of wheat, although declines were not so marked. The level for the year was considerably less than in 1925 and 1926 and quotations were lowest in December.

Wheat and Flour Exports.

Comparisons of the exports of wheat and flour with those of other cereals have been presented in Tables 25 and 26. During the period

from 1875 to 1900 exports of wheat and flour averaged about 30 per cent of the total crop. (Table 29.) However, since 1900 the ratio of exports to production has shown considerable variation. Stimulated by the war, wheat exports were greatly expanded and reached a maximum in the crop year 1920–21, when 366,000,000 bushels were exported, or nearly four-ninths of the entire production. Exports declined considerably during the next three crop years, but more than 258,000,000 bushels were exported in 1924. Our wheat harvest was poor in 1925, and exports for the crop year reached the lowest ebb since 1911–12, being only 108,000,000 bushels, but in 1926–27 the exports reached 219,000,000 bushels. For the first nine months of 1927–28 exports have been greater than for the same period last year.

The United Kingdom is by far the largest market for direct shipments of wheat from the United States, having taken 42,580,000 bushels during the year 1927. In addition to the above our statistics show 47,949,000 bushels exported to Canada, practically all of which eventually found its way to the United Kingdom and other European countries. The Netherlands, our next largest customer in 1927, took 14,013,000 bushels; it is believed, however, that a good deal of this wheat eventually went to Germany. Italy, France, and Belgium are also consistent heavy buyers of United States wheat, taking in 1927, 11,833,000, 11,832,000, and 11,574,000 bushels, respectively.

Table 33.—Exports of Wheat and Flour from the United States, by Grand Divisions and Principal Countries

[Wheat in thousands of bushels, wheat flour in thousands of barrels]

Destination	1910–1914,[1] average	1921–1925, average	1926	1927	Destination	1910–1914,[1] average	1921–1925, average	1926	1927
Wheat, grain	**56,913**	**159,222**	**138,275**	**168,307**	**Wheat, flour—Continued.**				
Europe	50,486	115,054	92,745	111,160					
Belgium	7,195	12,250	6,696	11,574	South America	1,151	941	1,671	1,571
France	3,002	8,497	8,925	11,832	Brazil	567	508	988	854
Greece	62	1,647	2,028	4,435	Europe	4,605	7,789	5,003	5,474
Irish Free State	(2)	[3] 428	4,793	3,596	Finland	[5] 305	522	452	471
Italy	2,367	27,279	8,401	11,833	Germany	187	1,483	657	656
Netherlands	8,351	12,947	14,710	14,013	Greece	1	353	348	138
United Kingdom [2]	21,806	34,580	37,897	42,580	Netherlands	819	1,325	1,225	1,538
Canada [4]	1,776	29,904	26,327	47,949	Scandinavia	501	586	641	927
Japan	2,338	7,065	8,006	4,105	United Kingdom [2]	2,713	2,204	1,439	1,438
					Asia and Oceania	2,348	3,036	1,819	2,277
Wheat, flour	**10,679**	**15,049**	**11,850**	**12,823**	China	264	997	506	608
					Hong Kong	1,121	786	436	774
North America	2,450	2,846	2,704	2,757	Kwangtung	32	394	165	128
Cuba	856	1,126	1,146	1,239	Philippine Islands	279	488	610	635
Haiti	234	266	279	265	Africa	124	436	654	744
British West Indies	473	235	154	150	British Africa	67	112	149	184
Central America	508	540	580	635	Egypt	39	202	359	221

[1] Fiscal years; others calendar.
[2] United Kingdom includes Irish Free State previous to 1925.
[3] 1 year only, 1925.
[4] For the most part in transit for Europe.
[5] 4-year average, 1911–1914.

Source: Bureau of Foreign and Domestic Commerce.

The Netherlands was the largest purchaser of American flour in 1927, having taken 1,538,000 barrels. However, as in the case of wheat, a good deal of this flour eventually went to Germany and other continental European countries. China (including Hong Kong and Kwantung) was a close second, taking 1,510,000 barrels. The United Kingdom took 1,438,000 barrels and Cuba took 1,239,000 barrels. Cuba, Haiti, and Central America are quite dependable markets, as their purchases vary comparatively little from year to year.

COTTON

SUMMARY.—World production of cotton showed a decrease in 1927 and prices advanced considerably from the 1926 level. The 1927 crop in the United States was 28 per cent smaller than that of 1926. This was brought about by a reduction of nearly 15 per cent in the acreage and 17 per cent in yield per acre. The New Orleans price showed a steady increase from 12 cents per pound in December, 1926, to 22 cents in September, 1927, but declined to 19 cents in December, 1927. The exports during the first nine months of the cotton season aggregated 6,191,000 bales, which was 32 per cent less than in the corresponding period of 1926–27.

ACREAGE AND PRODUCTION

The United States generally produces from one-half to three-fifths of the world supply of cotton and occupies a more dominant position with respect to cotton than with respect to almost any other commodity. The only other important sources of supply are India, China, Egypt, Asiatic Russia, and Brazil. Over one-half of the American crop is usually exported, so that foreign conditions greatly affect demand, while, on the other hand, changes in American production have an important influence on world cotton prices.

During the season 1926–27 the production in the United States, India, Mexico, and Egypt increased. The total world production was slightly larger than in 1925–26. In 1927–28 the production in the United States declined sharply from that of the preceding year and the production in Mexico and Egypt likewise showed a decline. On the other hand, production in India and Russia increased. Crop estimates for 1927–28 are not yet available for a number of countries.

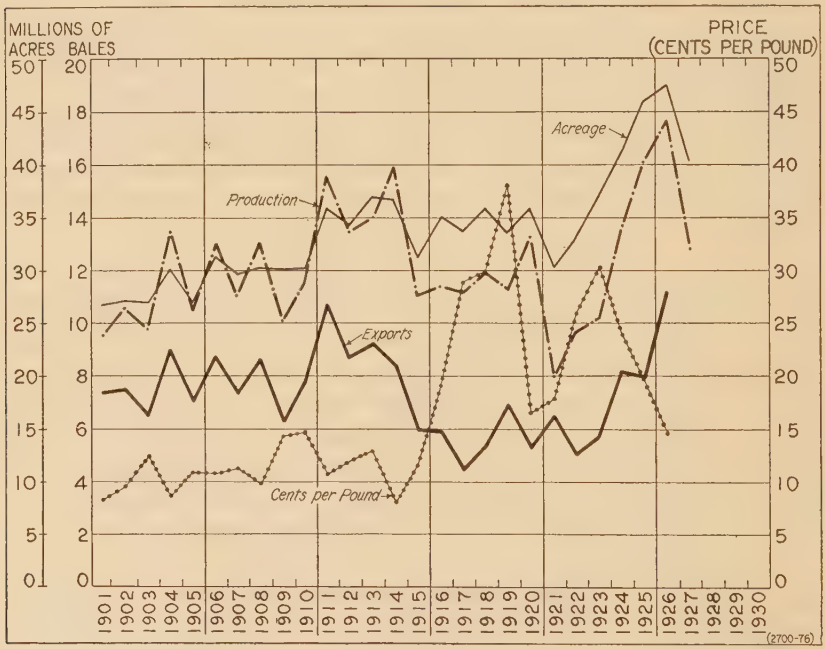
The depredations of the boll weevil had a great effect upon the supply and prices of American cotton during the past decade. The boll weevil first became a serious menace in the southern part of the Cotton Belt, but has since moved northward and eastward, causing great damage throughout practically the entire belt. Destruction wrought by this pest was an important contributing factor to the reduced yield per acre for a number of years. In 1921, owing largely to the damage by the boll weevil, the yield per acre was reduced to 124.5 pounds as against an average of 192 pounds in the pre-war years 1911–1915. In later years, however, the damage was

not so great, owing to cold winters and dry summers, which are unfavorable to the boll weevil, and to various measures taken to combat it. The yield per acre was 157.4 pounds in 1924, 167.2 pounds in 1925, and 182.6 pounds in 1926, but declined to 152.3 pounds in 1927. (Table 34.)

Farm prices of cotton fell sharply in 1920, but small crops in 1921 to 1923 resulted in a marked advance in prices; under this

Chart XIV.—COTTON: ACREAGE, PRODUCTION, EXPORTS, AND PRICES

NOTE.—Exports and prices are for 12 months beginning July 1 and August 1, respectively of the year specified.



stimulus the cotton acreage has increased rapidly (Chart XIV), and in 1926 the area harvested totaled 47,087,000 acres, exceeding the pre-war average by more than one-third. In 1927, however, the acreage declined to 40,168,000. Production in 1926, according to the Census Bureau, amounted to 17,755,000 bales, which is a record crop and 27 per cent greater than the average production for 1911–1915. In 1927 the production declined sharply, the decrease amounting to 28 per cent. It should be noted that the accompanying chart does not show all the data for the crop harvested in 1927, as exports from the crop of that year and the average crop-year prices are not yet determined.

Table 34.—Acreage, Production, and Exports of Cotton and Production of Cottonseed

NOTE.—Exports are for 12 months beginning July 1 of year specified. Cotton production (excluding linters) and exports in running bales counting round as half bales.

Yearly average or year	Cotton						Cottonseed [1]		
	Area	Production [1]	Farm value, Dec. 1	Yield per acre [2]	Farm price, Dec. 1	Exports (domestic)	Production	Yearly average farm price	Farm value
	1,000 acres	*1,000 bales*	*1,000 dollars*	*Pounds*	*Cents per lb.*	*1,000 bales*	*1,000 tons*	*Dollars per ton*	*1,000 dollars*
1876–1885	15,209	5,652	243,808	170.7	9.1	3,869	2,607		
1886–1895	19,421	7,637	260,415	176.9	7.7	5,225	3,645		
1896–1900	24,364	10,023	337,592	193.3	7.1	6,778	4,859		
1901–1905	27,865	10,787	485,560	184.8	9.0	7,088	5,185	15.68	82,665
1906–1910	31,364	11,754	660,788	180.3	11.3	7,763	5,281	20.10	103,728
1911–1915	35,132	14,000	709,629	192.0	10.2	8,589	6,317	22.04	135,066
1916–1920	34,856	11,823	1,464,088	163.2	24.9	5,631	5,312	54.40	283,914
1921–1925	37,616	11,528	1,276,329	146.4	22.2	6,707	5,114	34.34	174,318
1920	35,878	13,271	933,658	178.4	13.9	5,409	5,971	22.92	136,990
1921	30,509	7,978	643,933	124.5	16.2	6,542	3,531	29.72	104,560
1922	33,036	9,729	1,160,968	141.2	23.8	5,066	4,336	34.70	150,400
1923	37,123	10,171	1,571,829	130.6	31.0	5,732	4,502	42.22	190,050
1924	41,360	13,639	1,540,884	157.4	22.6	8,205	6,051	34.16	206,220
1925	46,053	16,123	1,464,032	167.2	18.2	7,991	7,150	30.88	220,360
1926	47,087	17,755	982,736	182.6	10.9	11,162	7,989	21.63	172,120
1927	40,168	12,778	1,253,599	152.3	19.6	[3]	5,758	[4]	[4]
Per cent change, 1927 from 1926	−14.7	−28.0	+27.6	−16.6	+79.8		−27.9		

[1] Cottonseed figures, all years, and cotton production, 1899 to date, Bureau of the Census; other figures, except exports, Department of Agriculture.
[2] Averages for 1876–1885 to 1916–1920 are simple yearly averages of the average yield per acre.
[3] Total for 9 months ending March, 1928, 6,190,767 bales; corresponding figures for 1927, 9,076,932 bales.
[4] Not available.

Sources: Bureau of Agricultural Economics, Department of Agriculture; Bureau of the Census and Bureau of Foreign and Domestic Commerce, Department of Commerce.

Table 35.—Cotton: Acreage and Production, by States

[Production of lint (excluding linters) in 500-pound gross-weight bales]

State	Acreage (1,000 acres)						Production (1,000 bales)					
	1909–1913, average	1921–1925, average	1924	1925	1926	1927	1909–1913, average	1921–1925, average	1924	1925	1926	1927
United States	**34,152**	**37,616**	**41,360**	**46,053**	**47,087**	**40,168**	**13,033**	**11,518**	**13,628**	**16,104**	**17,977**	**12,950**
North Carolina	1,516	1,746	2,005	2,017	1,985	1,727	808	915	825	1,102	1,213	861
South Carolina	2,662	2,301	2,404	2,654	2,648	2,421	1,295	743	807	889	1,008	730
Georgia	5,141	3,529	3,046	3,589	3,965	3,412	2,087	852	1,004	1,164	1,496	1,100
Alabama	3,708	2,929	3,055	3,504	3,651	3,225	1,354	867	986	1,357	1,498	1,192
Mississippi	3,181	3,052	2,981	3,466	3,752	3,338	1,181	1,099	1,099	1,991	1,888	1,355
Louisiana	1,031	1,441	1,616	1,874	1,979	1,560	341	479	493	910	829	547
Texas	10,920	14,310	17,175	17,608	18,374	16,270	3,731	3,776	4,951	4,165	5,631	4,355
Arkansas	2,262	3,008	3,094	3,738	3,790	3,045	868	1,029	1,098	1,605	1,548	1,000
Tennessee	797	992	996	1,173	1,143	943	337	359	356	517	452	359
Oklahoma	2,539	3,479	3,861	5,214	4,676	3,433	870	993	1,511	1,691	1,773	1,037
Other States	395	830	1,127	1,216	1,124	794	161	407	500	713	641	414

Sources: Acreage, Bureau of Agricultural Economics, Department of Agriculture; production, Bureau of the Census, Department of Commerce.

There has been a very considerable shift in the geographical distribution of the cotton acreage in the United States since pre-war years largely by reason of the varying influence of the boll weevil. A comparison of the 1926 acreage with that of 1914 shows that the

acreage in Georgia, Alabama, and Florida has declined considerably and that in South Carolina slightly, while increases have occurred in all other cotton States. The greatest expansion of acreage has occurred in the States west of the Mississippi—Oklahoma, Arkansas, Texas, and Louisiana. From 1926 to 1927 there was a general decrease in cotton acreage and production in all States. (Table 35.) Oklahoma showed larger decreases in both acreage and production than any of the other important cotton States.

PRICES

The price of cotton is subject to very sharp variations owing to marked changes in supply as well as in demand. (Tables 36 and 37. See also Table 15.) From about 1900 to the outbreak of the World War cotton prices showed a general upward movement. The highest level known since the Civil War was attained in the crop year 1919–20, when the average price of middling upland cotton at New Orleans, 38 cents, was more than three times the average of the years 1911–1915. During the two following crop years prices averaged somewhat less than one-half as high. There was a great advance during the next two years, owing to the small production, and prices reached a peak of 35 cents in December, 1923. After that time cotton prices showed a marked, though intermittent, decline, reaching 12 cents in December, 1926, or about one-third of the peak three years before. The fall in prices was principally because of the large crops of 1925 and 1926. Prices increased steadily from 10 cents in December, 1926, to 22 cents in September, 1927, and then declined gradually to 19 cents in December, 1927. The rise was owing to the rapid disappearance of stocks and the marked decrease in the size of the 1927 crop.

Table 36.—Average Farm Prices of All Cotton and New Orleans Spot Prices of Middling Upland Cotton, by Crop Years

NOTE.—Farm prices represent weighted averages for the entire country. Annual averages are weighted according to quantities marketed each month. New Orleans yearly figures are simple averages of monthly averages.

[Prices in cents per pound]

Crop year ending July—	Farm price [1]	New Orleans spot price	Crop year ending July—	Farm price [1]	New Orleans spot price	Crop year ending July—	Farm price [1]	New Orleans spot price
1901–1905	[2]	[3] 9.6	1912	9.6	10.9	1920	35.2	38.2
1906–1910	[2]	11.5	1913	11.5	12.2	1921	15.8	16.6
1911–1915	11.0	[4] 11.8	1914	12.5	13.1	1922	17.0	17.9
1916–1920	23.9	25.5	1915	7.4	[4] 8.2	1923	22.8	25.9
1921–1925	21.4	23.0	1916	11.2	11.7	1924	28.7	30.3
			1917	17.3	18.8	1925	22.9	24.2
1910	13.6	14.3	1918	27.1	29.0	1926	19.6	19.7
1911	14.0	14.7	1919	28.8	29.9	1927	12.5	14.7

[1] Based on price quoted on the 15th of the month.
[2] Not available.
[3] The crop year ending 1901 based on 11 months, September to July.
[4] The crop year ending 1915 based on 10 months, October to July.

Source: Bureau of Agricultural Economics, Department of Agriculture.

Table 37.—Average Farm Prices of All Cotton and New Orleans Spot Prices of Middling Upland Cotton, by Months

NOTE.—Farm prices represent weighted averages for the entire country. New Orleans yearly figures are simple averages of monthly averages.

[Prices in cents per pound]

Month	Farm price [1]							New Orleans price						
	1921	1922	1923	1924	1925	1926	1927	1921	1922	1923	1924	1925	1926	1927
January	11.6	15.9	25.2	32.5	22.7	17.4	10.6	14.53	16.53	27.51	33.93	23.66	20.26	13.17
February	11.0	15.7	26.8	31.4	23.0	17.6	11.5	12.85	16.36	28.78	31.90	24.61	19.83	13.82
March	9.8	16.0	28.0	27.7	24.5	16.5	12.5	11.08	16.74	30.43	28.74	25.52	18.35	14.11
April	9.4	16.0	27.6	28.7	23.7	16.6	12.3	11.17	16.80	28.42	30.41	24.52	18.11	14.42
May	9.6	17.3	26.2	28.1	23.0	16.0	13.9	11.80	19.31	26.63	30.70	23.54	18.06	15.68
June	9.7	19.6	25.9	27.8	23.0	16.1	14.8	11.03	21.68	28.61	29.43	24.07	17.54	16.46
July	9.7	20.6	24.8	27.3	23.4	15.4	15.5	11.49	22.01	25.73	29.23	24.05	18.24	17.63
August	11.2	20.9	23.8	27.8	23.4	16.1	17.1	12.78	21.55	24.22	26.65	23.07	18.01	19.36
September	16.2	20.6	25.6	22.2	22.5	16.8	22.5	19.35	20.74	27.71	22.79	23.09	16.14	21.53
October	18.8	21.2	28.0	23.1	21.5	11.7	21.0	18.99	22.05	29.18	23.48	20.86	12.68	20.73
November	17.0	23.1	29.9	22.5	18.1	11.0	20.0	17.27	25.34	33.68	23.95	19.82	12.52	19.99
December	16.2	24.2	32.1	22.2	17.4	10.0	18.7	17.16	25.48	34.88	23.66	19.27	12.22	19.26

[1] Based on price quoted on the 15th of the month.

Source: Bureau of Agricultural Economics, Department of Agriculture.

EXPORTS

Despite the development of cotton manufactures in the United States, the proportion of the American crop exported remained substantially unchanged until the outbreak of the war, roughly two-thirds of the crop going abroad. For the crops of 1920 to 1923 the proportion averaged considerably lower—55 per cent. Exports for the year ending June 30, 1926, totaled 7,991,000 bales (Table 34), which was almost one-half of the 1925 crop. However, the ratio of exports to production can not be taken as the true relation of the exports to the crop in the specified year, because in some years a considerable portion of the crop is added to stocks. The large supply and low prices of cotton in 1926 substantially stimulated foreign as well as domestic demand. The exports for the year ending July 31, 1927, amounted to 11,587,000 bales (equivalent 500 pounds), showing a large increase over the 8,377,000 bales exported during the same period in 1926. The exports in 1926–27 comprised 63 per cent of the current crop. (Table 34.) In the first nine months of the 1927–28 cotton season, cotton exports aggregated 6,191,000 bales, or 32 per cent less than in the corresponding period of the 1926–27 season. Table 38 shows the changes in quantity and value of exports of cotton both by crop years and by calendar years since 1919. There has been considerable change in the relative importance of different countries as markets for American cotton during recent years as compared with pre-war years. (Table 39.) Exports to the United Kingdom have declined considerably since 1913, while exports to Japan were more

than three and one-half times as great in 1927 as in 1913. The exports to Germany were considerably less in most of the postwar years than in 1913, but in 1927 were 11 per cent larger. Exports to Italy, Russia, Canada, and China in 1927 were also substantially greater than in 1913. Further data regarding cotton are given in the section on textile manufactures.

Table 38.—Exports and Imports of Cotton

[Quantity in thousands of bales (equivalent 500-pound bales) and value in thousands of dollars]

Yearly average or year	Exports, year ending July 31			Exports, calendar year			Imports, calendar year		
	Quantity	Value	Average price per pound (cents)	Quantity	Value	Average price per pound (cents)	Quantity	Value	Average price per pound (cents)
1910–1914	8,830	551,378	12.5	8,579	518,071	12.1	232	21,054	18.2
1919	5,843	928,631	31.8	6,735	1,137,371	33.8	351	71,886	41.0
1920	6,761	1,335,885	39.5	6,359	1,136,409	35.7	600	138,744	46.2
1921	6,026	592,305	19.7	6,678	534,242	16.0	278	32,902	23.7
1922	6,479	602,506	18.6	6,307	673,250	21.4	372	47,682	25.6
1923	5,049	640,795	25.4	5,486	807,103	29.4	375	49,443	26.4
1924	5,936	911,544	30.7	6,965	950,581	27.3	321	48,596	30.3
1925	8,435	1,056,123	25.0	8,768	1,059,751	24.2	313	52,775	33.7
1926	8,377	926,433	22.1	9,383	814,429	17.4	363	46,240	25.5
1927	11,587	862,757	14.9	9,794	826,313	16.9	411	45,669	22.2

Source: Bureau of Foreign and Domestic Commerce.

Table 39.—Domestic Exports of Cotton, by Principal Countries of Destination

Country of destination	Quantity (thousands of running bales)							Per cent of total		Value (millions and tenths of million dollars)	
	1913 [1]	1922	1923	1924	1925	1926	1927	1913	1927	1926	1927
Total	**8,725**	**6,114**	**5,279**	**6,795**	**8,532**	**9,048**	**9,478**	**100.0**	**100.0**	**814.4**	**826.3**
Belgium	214	193	161	168	202	230	266	2.5	2.8	22.0	23.8
France	1,015	828	653	795	918	1,009	945	11.6	10.0	95.6	93.5
Germany	2,351	1,265	1,012	1,641	2,029	2,083	2,611	26.9	27.5	175.1	230.7
Italy	479	570	534	588	727	816	670	5.5	7.1	76.6	60.6
Netherlands	14	92	88	120	149	124	135	.2	1.4	11.0	12.5
Russia in Europe	71	1	6	238	298	262	475	.8	5.0	32.8	39.2
Spain	298	328	172	237	298	311	315	3.4	3.3	29.7	29.7
Sweden	41	57	65	65	55	55	58	.5	.6	5.1	5.3
United Kingdom [2]	3,563	1,846	1,581	1,986	2,457	2,308	1,694	40.8	17.9	208.4	140.2
Canada	148	206	193	167	228	263	264	1.7	2.8	21.4	20.9
China	7	36	27	31	55	172	243	.1	2.6	13.3	19.1
Japan	375	589	674	675	1,003	1,251	1,437	4.3	15.2	107.9	122.9
Other	149	103	113	84	113	164	365	1.7	3.9	15.5	27.9

[1] Fiscal year, others calendar. [2] Includes Irish Free State previous to 1925.

Source: Bureau of Foreign and Domestic Commerce.

SUGAR

SUMMARY.—The United States produces within its continental limits about one-sixth of its sugar requirements, chiefly in the form of beet sugar, the remainder being supplied by Cuba and our insular possessions. Preliminary official estimates place the 1927–28 beet-sugar crop of the United States at 1,060,000 short tons, which was only 3 per cent less than the record production

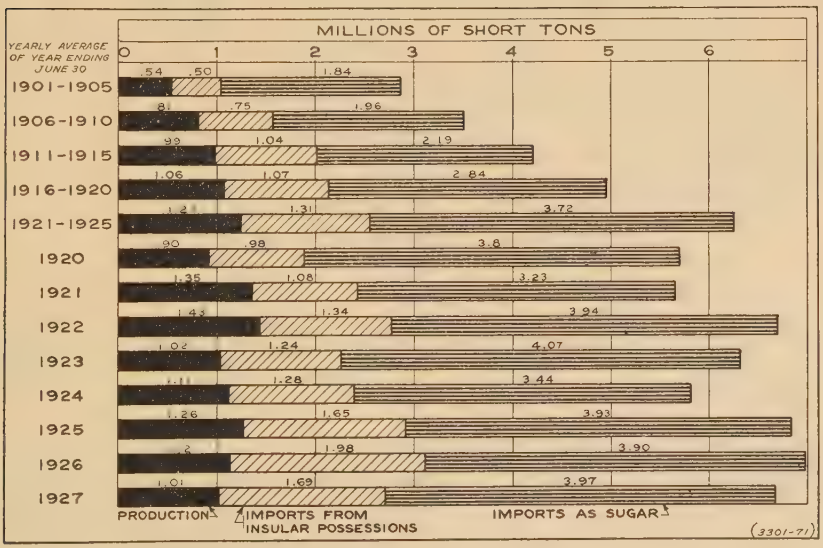
of 1924–25. The world crop for 1927–28 is expected to exceed the high mark of 1925–26. The average New York price of raw sugar, duty paid, for 1927 was 4.7 cents per pound, an increase over the 1926 average price of 4.3 cents, but 13 per cent less than the five-year average price during the years 1921–1925.

PRODUCTION AND CONSUMPTION

The United States ranks first among sugar-using nations, consuming about one-fourth of the world's supply. It is, however, outranked by several countries as a producer, and hence imports the larger part of its consumption. We import raw sugar chiefly from Cuba and our insular possessions and refine it in this country. In the refining industry (Table 41) the cost of materials constitutes much the greater part of the total value of products.

Considerable quantities of sugar beets are produced in this country, mainly in the West, and these are manufactured directly into refined sugar by factories located in or close to the areas of beet production.

Chart XV.—SUGAR: PRODUCTION AND IMPORTS



Practically all the cane sugar grown in continental United States is produced and refined in Louisiana. The sources of our sugar supply in recent years, while varying considerably from year to year, may be divided roughly as follows: Domestic production, one-fifth; imports from our insular possessions, one-fifth (see Chart XV); and imports from foreign countries, three-fifths. Domestic production has shown comparatively little change during the past decade, but imports from our insular possessions and from foreign countries have substantially increased.

Table 40.—Sugar Production: United States, Its Possessions, and World Total

[In thousands of short tons]

Yearly average or year ending June 30—	United States and possessions	United States			Porto Rico [1]	Hawaii [2]	Philippine Islands [3]	World total	Per cent of world total in—	
		Total	Beet (chiefly refined)	Cane (chiefly raw)					United States	United States and possessions
1871–1875	281	72	(4)	72	95	[5] 13	111	(6)	(6)	(6)
1876–1880	347	96	(4)	96	78	20	152	(6)	(6)	(6)
1881–1885	476	131	1	130	87	64	195	(6)	(6)	(6)
1886–1890	542	153	1	152	73	119	196	(6)	(6)	(6)
1891–1895	759	285	14	271	63	145	266	(6)	(6)	(6)
1896–1900	812	327	48	279	56	256	174	10,844	3.0	7.5
1901–1905	1,141	542	194	348	115	389	94	13,321	4.1	8.6
1906–1910	1,685	801	440	361	255	489	141	15,784	5.1	10.7
1911–1915	2,202	937	652	285	363	593	309	19,796	4.7	11.1
1916–1920	2,517	1,009	789	220	466	594	447	18,910	5.3	13.3
1921–1925	2,846	1,162	951	211	477	622	585	22,101	5.3	12.9
1920	2,356	848	726	122	485	556	467	17,999	4.7	13.1
1921	2,885	1,265	1,089	176	490	522	608	19,563	6.5	14.7
1922	2,882	1,348	1,020	328	408	592	533	20,577	6.6	14.0
1923	2,362	971	675	296	379	537	475	20,861	4.7	11.3
1924	2,713	1,046	881	165	448	691	529	22,833	4.6	11.9
1925	3,387	1,178	1,090	[7] 88	660	769	780	26,671	4.4	12.7
1926	3,050	1,052	913	[7] 139	603	787	607	27,727	3.8	11.0
1927	3,038	944	897	[7] 47	629	811	[8] 654	26,335	3.6	11.5
1928 (preliminary)	3,312	1,138	1,060	[7] 78	673	829	[8] 672	27,744	4.1	11.9

[1] Statistics for 1900 to 1906 represent shipments to the United States.
[2] Statistics for 1874 to 1880 represent exports.
[3] Exports 1871 to 1911, production 1912 and subsequently.
[4] Less than 500.
[5] One year only.
[6] Not available.
[7] Louisiana only.
[8] Willett and Gray's estimate.

Source: Bureau of Agricultural Economics, Department of Agriculture.

Table 41.—Sugar Manufacturing Industries (Census Statistics)

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
BEET SUGAR							
1909	58	7,204	57,202	$4,808,446	$27,265,170	$48,122,383	$20,857,213
1914	60	7,997	76,705	6,606,204	41,399,361	62,605,210	21,205,849
1919	85	11,781	127,394	15,908,118	87,029,144	149,155,892	62,126,748
1921	92	13,602	(1)	22,658,392	121,868,863	139,109,655	17,240,792
1923	84	7,571	127,771	10,103,182	70,820,150	118,313,978	47,493,828
1925	89	8,872	146,985	12,088,057	87,038,225	132,339,012	45,300,757
CANE SUGAR							
1909	214	4,127	122,189	1,862,751	21,294,844	30,620,738	9,325,894
1914	181	3,632	113,246	1,561,376	15,958,218	21,635,373	5,677,155
1919	202	6,101	101,859	4,009,369	44,143,416	57,741,320	13,597,904
1921	134	2,724	(1)	2,296,207	16,941,432	22,961,221	6,019,789
1923	122	2,820	88,214	1,727,893	20,963,005	27,180,783	6,217,778
1925	94	2,066	72,796	1,410,964	11,586,359	13,434,999	1,848,640
CANE-SUGAR REFINING							
1909	19	9,399	38,414	5,620,971	226,287,960	248,628,659	22,340,699
1914	18	11,253	49,666	7,823,377	264,085,358	289,398,715	25,313,357
1919	20	18,202	52,541	22,710,464	662,143,981	730,986,706	68,842,725
1921	20	15,457	(1)	19,463,410	426,600,908	466,602,352	40,001,444
1923	20	15,254	72,682	20,044,499	681,880,139	726,241,577	44,361,438
1925	21	14,502	89,098	18,955,114	549,896,102	606,632,783	56,736,681

[1] Not called for in schedules for 1921.

Source: Bureau of the Census.

Table 42.—Sugar: Production, Trade, and Supply Available for Consumption

[In short tons, except per capita consumption, which is in pounds]

Yearly average or year ending June 30—	Production (beet and cane only)	Brought in from insular possessions[1]	Imports as sugar	Domestic exports as sugar[2]	Exports in other forms	Available for consumption	
						Total	Per capita
	In terms of raw sugar						
1871–1875	72,508		777,685	5,269	(3)	844,924	40.7
1876–1880	96,444		830,375	23,820	(3)	902,999	38.1
1881–1885	131,073		1,151,724	39,347	(3)	1,243,449	46.5
1886–1890	152,879		1,414,647	43,136	(3)	1,524,389	50.9
1891–1895	284,346		1,864,201	16,903	(3)	2,131,644	64.3
1896–1900	326,362		1,943,678	5,660	(3)	2,264,380	62.2
1901–1905	542,788	500,764	1,839,377	7,301	(3)	2,875,638	71.7
1906–1910	808,015	751,650	1,956,304	32,423	(3)	3,483,547	78.9
1911–1915	985,511	1,038,605	2,187,469	91,554	15,164	4,104,886	85.7
1916–1920	1,069,086	1,066,272	2,334,957	642,023	44,538	4,283,754	83.3
1921–1925	1,232,959	1,314,489	3,721,100	448,697	36,102	5,783,849	104.4
1910	882,630	927,752	1,934,754	72,382	24,351	3,648,403	79.7
1911	903,475	943,701	1,845,279	36,597	15,966	3,639,891	78.3
1912	1,005,337	1,187,663	1,832,424	50,380	15,160	3,959,883	83.9
1913	907,070	1,026,972	2,266,426	30,963	19,217	4,150,288	86.6
1914	1,088,844	936,376	2,463,252	37,190	11,892	4,439,489	91.3
1915	1,022,828	1,098,314	2,529,963	302,641	13,585	4,334,878	87.9
1916	1,078,407	1,102,057	2,689,067	882,864	12,213	3,974,453	79.4
1917	1,193,107	1,203,938	2,527,984	676,752	29,211	4,219,066	83.2
1918	1,068,437	975,684	2,344,816	305,429	46,131	4,037,377	78.5
1919	1,102,421	1,073,944	2,799,962	568,566	36,747	4,371,013	83.8
1920	903,060	975,735	3,812,955	776,502	98,386	4,816,862	91.1
1921	1,346,811	1,076,342	3,228,279	319,589	89,491	5,242,852	97.6
1922	1,424,726	1,340,867	3,940,777	1,085,349	31,397	5,589,624	102.4
1923	1,021,360	1,235,049	4,068,205	412,196	12,568	5,899,849	106.5
1924	1,111,898	1,274,870	3,436,955	152,883	24,617	5,646,223	100.2
1925	1,260,000	1,645,319	3,931,282	273,470	22,436	6,540,695	114.2
1926	1,121,000	1,981,482	3,895,947	325,804	24,998	6,647,627	114.4
1927	1,011,000	1,689,347	3,968,880	447,055	(4)	(4)	(4)
1928	1,217,000	(4)	(4)	(4)	(4)	(4)	(4)
	In terms of refined sugar[5]						
1922	1,325,906	1,260,894	3,686,397	1,009,377	29,182	5,234,638	95.9
1923	950,625	1,161,351	3,805,745	383,439	11,682	5,522,600	99.7
1924	1,034,615	1,198,777	3,214,883	142,217	22,943	5,283,115	93.7
1925	1,172,000	1,547,587	3,674,563	254,391	20,911	6,118,848	106.8
1926	1,043,000	1,859,332	3,634,323	303,073	23,298	6,210,284	106.8
1927	941,000	1,588,981	3,714,054	415,865	(4)	(4)	(4)
1928	1,133,000	(4)	(4)	(4)	(4)	(4)	(4)

[1] Includes Hawaii, Porto Rico, and the Philippine Islands; Virgin Islands included after 1916.
[2] Includes shipments to Hawaii and Porto Rico. Excludes direct exports to foreign countries from these islands.
[3] Not computed.
[4] Not yet available.
[5] Raw sugar converted to refined by multiplying by the following factors: Cuba and Hawaii, .9358; Porto Rico, .9393; Philippine Islands, .95; all others, .932.

Source: Bureau of Agricultural Economics, Department of Agriculture.

Hawaii, Porto Rico, and the Philippines are all large producers of cane sugar, which they ship chiefly to this country. The current crop (1927–28) in all of these areas except the Philippines is estimated to be the largest in history. The output of cane sugar in the United States, where this industry centers in the State of Louisiana, is highly variable for several reasons, among which may be noted changeable climatic conditions and the tendency of the sugar mills to

make larger proportions of sirup and molasses from a given quantity of cane juice whenever the relative prices of these products compare favorably with sugar quotations. The 1927–28 Louisiana sugar crop has been estimated at 78,000 short tons, as compared with 47,000 tons in 1926–27, and a five-year average in 1921–1925 of 211,000 tons. (Table 40.)

Beet-sugar production in the United States showed another substantial increase in 1927–28 over the preceding year, and while slightly below the record year of 1924–25 was 11 per cent larger than the postwar average.

Census statistics for 1925 (Table 41) indicate an expansion in the beet-sugar industry, as compared with 1923, while the number of workers, value of products, and value added by manufacture in the cane-sugar industry declined. The number of wage earners was less in the cane-sugar refining industry, but this was probably a result of greater efficiency, as there was a substantial increase in the value added to products by manufacture.

In order to make sugar consumption figures as accurate as possible and readily comparable, sugars in Table 42 are converted to the hard refined equivalent (100° polarization) for the years 1922 to 1928, inclusive. Thus, the consumption figures for these past seven years are for sugar in the form in which it is consumed. Even so, it must be borne in mind that they are not absolutely accurate, since no account is taken of stocks at the beginning and end of the periods.

Table 43.—Sugar: Per Cent of World Production Retained for Consumption and the Sources of Consumption

Yearly average or year ending June 30—	Per cent of world production retained for consumption	Per cent of consumption from [1]—			Year ending June 30—	Per cent of world production retained for consumption	Per cent of consumption from [1]—		
		Domestic	Noncontiguous territories [2]	All foreign countries [2]			Domestic	Noncontiguous territories [2]	All foreign countries [2]
1866–1870	[3]	5.6	14.1	80.3	1912	22.0	24.4	30.2	45.4
1871–1875	[3]	8.6	13.4	78.0	1913	20.2	20.8	24.9	54.3
1876–1880	[3]	10.7	13.5	75.8	1914	20.9	23.5	21.3	55.2
1881–1885	[3]	10.5	17.1	72.4	1915	20.7	22.5	25.5	52.0
1886–1890	[3]	10.0	18.8	71.2	1916	21.1	25.4	27.7	46.9
1891–1895	[3]	13.3	11.1	75.6	1917	22.8	26.7	28.5	44.8
1896–1900	20.9	14.4	13.4	72.1	1918	19.9	25.0	24.1	50.9
1901–1905	21.6	18.9	17.4	63.7	1919	23.4	23.7	24.4	51.9
1906–1910	22.0	23.0	21.6	55.3	1920	27.0	17.4	20.1	62.5
1911–1915	20.6	23.0	25.6	51.4	1921	26.9	24.0	20.4	55.6
1916–1920	22.8	23.5	24.8	51.8	1922	27.3	24.0	23.9	52.1
1921–1925	26.1	20.1	22.8	57.2	1923	28.2	16.5	21.0	62.5
					1924	24.6	18.6	22.7	58.7
1908	21.7	26.1	24.0	49.9	1925	24.3	18.1	25.3	56.5
1909	22.9	23.1	21.9	55.0	1926	23.8	15.9	29.9	54.2
1910	21.6	23.2	25.5	51.3	1927	24.2	14.8	26.5	58.8
1911	19.2	23.9	26.1	50.0					

[1] Exports assumed to be wholly from sugar imported from foreign countries.
[2] Virgin Islands included in noncontiguous territories, 1918 to date, previous years in all foreign countries.
[3] Not available.

Source: Bureau of Agricultural Economics, Department of Agriculture.

For the first time since 1923 the percentage of total world sugar retained by the United States for consumption showed an increase in 1927. The percentage of sugar contributed to United States supplies by our insular possessions increased steadily from 1923 to 1926, but decreased in 1927. (Table 43.) The percentage of supply contributed by our domestic beet and cane sugar industries, on the other hand, has declined since 1924.

MARKET CONDITIONS AND PRICES

Owing largely to the effect of the war in cutting down sugar production in Europe, the price of raw sugar reached unprecedented levels in 1920. It then dropped enormously, but diminution of world stocks as a result of short crops in the period 1919–20 to 1921–22, inclusive, coupled with recovery of Europe's consuming ability, caused it to advance again in 1923. These factors so stimulated production the world over, and especially in Cuba, that prices declined materially in 1924 and for the following three years remained at a relatively low level. New York quotations for duty-paid raw sugar averaged 4.3 cents per pound in both 1925 and 1926 and 4.7 cents in 1927. (Table 44.)

Table 44.—Wholesale Prices of Raw and Refined Sugar (Duty Paid)

[Cents per pound]

Yearly average, year, and month	Raw, 96° centrifugal	Refined, granulated	Month	Raw, 96° centrifugal	Refined, granulated	Month	Raw, 96° centrifugal	Refined, granulated
1891–1895	3.4	4.4	1925—Contd.			1927		
1896–1900	4.0	4.8	May	4.3	5.5	January	5.1	6.2
1901–1905	3.9	4.8	June	4.4	5.5	February	4.9	6.0
1906–1910	3.9	4.7	July	4.3	5.3	March	4.8	5.8
1911–1915	4.1	5.0	August	4.4	5.4	April	4.8	5.8
1916–1920	7.8	8.8	September	4.3	5.4	May	4.8	6.0
1921–1925	5.4	6.7	October	3.9	5.0	June	4.6	6.0
1918	6.4	7.8	November	4.0	5.1	July	4.5	5.9
1919	7.5	8.9	December	4.1	5.3	August	4.5	5.6
1920	13.0	12.6	1926			September	4.8	5.8
1921	4.8	6.2	January	4.2	5.1	October	4.7	5.7
1922	4.7	5.9	February	4.2	5.2	November	4.7	5.6
1923	7.0	8.4	March	4.0	4.9	December	4.6	5.6
1924	6.0	7.5	April	4.1	5.2			
1925	4.3	5.5	May	4.2	5.5	1928		
1926	4.3	5.5	June	4.1	5.4	January	4.5	5.7
1927	4.7	5.8	July	4.2	5.6	February	4.3	5.6
1925			August	4.2	5.5	March	4.5	5.7
January	4.6	6.1	September	4.4	5.6	April	4.5	5.8
February	4.6	5.8	October	4.6	5.7	May	4.5	5.9
March	4.7	5.9	November	4.7	5.8			
April	4.5	5.6	December	5.1	6.1			

Source: Survey of Current Business, Department of Commerce.

In considering the statistics presented in Table 45 it should be noted that meltings relate only to cane sugar, the monthly production of beet sugar not being reported. The greater part of the beet sugar is put on the market during the last few months of the year and the first part of the following year, and this accounts largely for the

seasonal decline in meltings of raw sugar at that time. The Cuban crop comes on the market in the early part of the year, and receipts from Cuba and our insular possessions are heaviest at that time. Large stocks of raw sugar are at that season accumulated in the hands of American refiners, and toward the end of each year such stocks reach their minimum.

Table 45.—Sugar Statistics: Annual, Quarterly, and Monthly Data

NOTE.—Figures for meltings and stock include reports from Boston, New York, Philadelphia, Savannah, New Orleans, Galveston, San Francisco, and Baltimore. Meltings are calculated from weekly reports, the odd days being prorated; they represent raw cane sugar handled by refineries.

Year, quarter, and month	Raw cane sugar (long tons)					Exports, refined (long tons)
	Imports from—		Receipts, Louisiana crop	Meltings	Stocks at refineries, end of period	
	Hawaii and Porto Rico	Foreign countries				
1919	831,864	3,133,788	97,848	3,918,564	14,497	658,692
1920	849,636	3,584,232	56,448	4,019,772	100,935	412,452
1921	894,864	2,664,060	105,744	3,553,560	58,730	416,868
1922	821,232	4,344,480	110,832	5,148,024	33,951	820,092
1923	762,900	3,441,672	169,224	4,148,760	56,788	198,240
1924	949,704	3,692,688	79,212	4,547,244	49,393	196,572
1925	1,203,084	3,992,532	59,424	5,112,900	120,146	338,736
1926	1,157,832	4,129,500	62,172	5,175,132	246,391	95,484
1927	1,201,212	3,675,708	17,712	4,882,356	205,573	111,768
1926						
January–March	353,259	1,121,044	30,624	1,309,610	290,061	32,339
April–June	507,225	1,209,740	876	1,408,810	541,467	26,659
July–September	198,541	924,357	1,646	1,366,413	287,655	24,251
October–December	98,807	874,359	29,027	1,090,296	246,391	12,236
1927						
January	70,187	163,973	1,404	290,613	177,791	5,760
February	142,800	366,551	123	362,841	300,858	6,541
March	157,549	400,544	46	553,004	321,629	18,295
April	158,556	417,332	30	482,656	379,210	15,822
May	144,715	348,546	50	472,528	370,898	10,524
June	140,717	285,968	42	503,703	361,915	8,345
July	98,160	323,434	25	459,108	308,961	12,956
August	93,071	346,818	34	457,961	296,012	17,297
September	74,520	278,078	23	384,903	258,427	4,451
October	76,540	319,464		375,748	254,963	3,642
November	24,340	223,855	5,727	295,922	215,665	4,480
December	20,058	201,139	10,204	243,364	205,573	3,651

Year and quarter	Cuban movement (long tons)		
	Receipts, Cuban ports	Exports	Stocks, end of period
1919	3,940,320	3,881,292	75,771
1920	3,459,372	3,297,732	209,237
1921	3,496,104	2,797,680	901,758
1922	4,294,704	5,139,624	45,349
1923	3,487,308	3,480,780	22,162
1924	3,990,648	3,984,420	23,850
1925	5,042,856	4,941,516	132,148
1926	4,611,852	4,666,392	69,741
1927	4,258,416	4,164,124	212,314
1926			
Jan.–Mar.	2,301,116	1,279,569	1,107,066
Apr.–June	1,367,011	1,183,586	1,327,592
July–Sept.	514,338	1,220,045	603,469
Oct.–Dec.	429,381	983,193	69,741

Month	Cuban movement (long tons)—Continued		
	Receipts, Cuban ports	Exports	Stocks, end of period
1927			
January	482,152	166,044	298,682
February	805,868	397,066	702,733
March	1,084,038	512,824	1,310,347
April	595,154	441,653	1,449,624
May	227,001	336,320	1,357,045
June	185,360	359,738	1,156,430
July	157,420	343,161	998,209
August	208,474	403,719	783,717
September	167,805	292,816	671,952
October	151,747	304,118	531,142
November	106,974	261,815	344,693
December	86,425	244,852	212,314

Source: Survey of Current Business, Department of Commerce.

FOREIGN TRADE

Practically all sugar imported by the United States is in raw form, destined for refining before sale to the consumer, and practically all exports are refined. Statistics for recent calendar years are shown in Table 46, whereas figures in several of the previous tables are for years ending June 30.

The total value of sugar imports from foreign countries and of receipts from Hawaii and Porto Rico combined was $383,000,000 in 1927, as compared with $338,000,000 in 1926 and $363,000,000 in 1925.

Exports of refined sugar were abnormally large during the war and immediate postwar years on account of the inability of the European beet-sugar industry to supply current demand. A sharp decline in our exports occurred in 1926, owing to the return of the European producing and refining industries to something near pre-war status, but exports in 1927 showed a moderate increase.

Table 46.—Sugar: Imports and Domestic Exports, by Calendar Years

[Quantities in millions and tenths of millions of pounds; values in thousands of dollars]

Imports	1924	1925	1926	1927	Exports	1924	1925	1926	1927
Imports, quantity	8,275.7	8,919.5	9,420.2	8,431.5	Exports,[2] refined sugar, quantity	440.5	758.7	213.8	250.6
Cuba	7,384.9	7,846.2	8,559.8	7,294.1	United Kingdom	[3] 125.9	374.4	26.8	101.0
Philippine Islands	[1] 678.0	985.5	760.9	1,061.0	France	51.1	29.4	13.6	3.4
Other countries	212.8	87.8	99.5	76.4	Greece	21.1	20.8	6.9	4.3
Total value	363,656	246,008	232,534	258,161	Norway	14.1	45.3	31.9	26.2
					Panama	2.8	5.1	3.8	4.5
Receipts from Hawaii and Porto Rico, quantity	2,139.3	2,711.1	2,612.8	2,701.2	Mexico	2.4	3.2	7.5	4.5
Hawaii	1,353.8	1,510.3	1,494.3	1,553.1	Canada	20.4	10.4	5.1	3.8
Porto Rico	785.6	1,200.8	1,118.5	1,148.1	Uruguay	54.1	67.7	43.0	34.3
					British Africa	3.0	6.9	10.7	7.4
Total value	126,106	117,013	105,574	125,165	Other countries	145.6	195.5	64.5	61.2
					Total value	24,028	28,160	7,570	10,301

[1] In the regular foreign trade reports the Philippines are treated as a foreign country.
[2] Not including reexports of imported sugar, nor shipments to outlying possessions (except Philippines).
[3] Includes Irish Free State in 1924.

Source: Bureau of Foreign and Domestic Commerce.

WORLD PRODUCTION AND STOCKS

World production of sugar for a long series of years is shown in Table 40, and a table showing the crops of principal individual countries will be included in Volume II of the Commerce Yearbook. As compared with the preceding year, the estimated world crop of 1927–28 shows a substantial increase and will establish a record world production if present indications prevail to the end of the current season. Although Cuba has restricted the current sugar crop to 4,000,000 long tons, the increased production of beet sugar in the United States and in Europe and the increased production of cane sugar in our insular possessions have resulted in this new production peak.

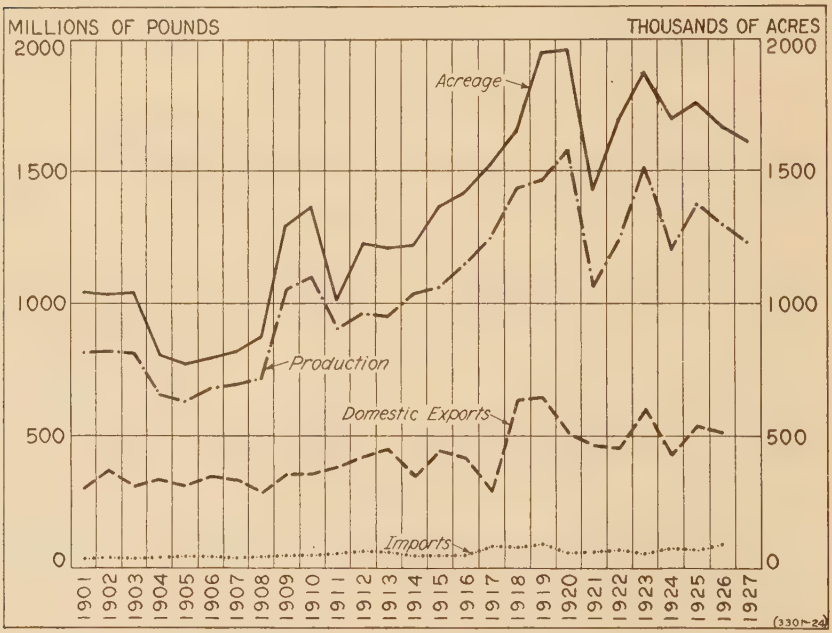
Stocks of raw sugar in 17 principal countries since 1924 reached a peak of 6,185,000 long tons in May, 1926. For the first 10 months of 1927 the stocks were smaller than for the same period of 1926, except on March 1, but on December 1, they were 901,000 short tons larger than on December 1, 1926.

TOBACCO

SUMMARY.—Declining prices and other unsatisfactory conditions among the growers in 1926 caused a further reduction in leaf-tobacco production in 1927, the crop totaling 1,237,832,000 pounds. Production of all types except the flue-

Chart XVI.—PRODUCTION, EXPORTS, AND IMPORTS OF UNMANUFACTURED TOBACCO

NOTE.—Exports and imports are for 12 months beginning July 1 of year specified.



cured tobaccos was smaller. Exports of leaf tobacco in 1927 aggregated 511,868,000 pounds, an increase of 5 per cent. Exports of all leaf types increased except dark fired Kentucky and Tennessee. Domestic leaf prices were well maintained but foreign prices weakened considerably. Owing to a curtailment of the cigarette trade with China, exports of tobacco products decreased in value by 19 per cent. More than 102,000,000,000 cigarettes were produced in the United States during the year, which is the greatest output of any year on record, and there was a slight increase in the production of cigars, but the output of manufactured tobacco was again reduced. There was no change in the per capita consumption of tobacco, which was about 6 pounds.

PRODUCTION AND DISTRIBUTION OF LEAF TOBACCO

The raw material requirements of the United States tobacco industry are supplied from the domestic crop, imports from foreign countries, shipments from Porto Rico, and stocks in the hands of

manufacturers and dealers. Owing to the excellent keeping qualities of tobacco under proper treatment and favorable climatic conditions, and because of the adjustability of the import supply, the manufacturing industry is characterized by great stability. Stocks are purchased and carried for a period of several years ahead and even acute price fluctuations at the source are thus smoothed out.

Production.

The United States crop of 1927 amounted to 1,238,000,000 pounds, valued at $266,000,000, from a harvested area of 1,610,000 acres. (Table 47.) Production represented a decrease of 4.6 per cent, and the area harvested a decrease of 2.8 per cent, but the farm value was 12½ per cent greater than in 1926. The average December 1 price paid to growers in 1927 was 21.5 cents per pound. The decline in production was caused by a decrease in the area planted to the dark heavy types, which had the effect of reducing the yield per acre. Production of all types except the flue-cured tobaccos was curtailed. In response to the continued growth in demand for cigarettes, flue-cured tobaccos showed an increase of 22½ per cent.

Table 47.—Acreage, Production, and Exports of Tobacco

NOTE.—Exports are of unmanufactured tobacco for 12 months beginning July 1 of year specified.

Year or yearly average	Area	Production	Farm value [1]	Yield per acre	Farm price, Dec. 1	Exports
CENSUS FIGURES	*1,000 acres*	*1,000 pounds*	*1,000 dollars*	*Pounds*	*Cents per pound*	*1,000 pounds*
1879	639	472,661	----------	740	----------	----------
1889	695	488,257	----------	702	----------	----------
1899	1,101	868,113	56,988	788	----------	----------
1909	1,295	1,055,765	104,303	815	----------	----------
1919	1,864	1,372,993	444,047	737	----------	----------
1924	1,538	1,106,340	211,733	719	----------	----------
DEPARTMENT OF AGRICULTURE ESTIMATES						
1901–1905	938	750,049	55,653	800	7.5	325,538
1906–1910	1,031	851,433	84,458	826	10.0	334,396
1911–1915	1,210	983,723	101,889	813	10.4	408,006
1916–1920	1,698	1,377,866	355,786	811	25.4	496,924
1921–1925	1,692	1,291,922	262,597	763	20.3	496,665
1920	1,960	1,582,225	335,675	807	21.2	506,526
1921	1,427	1,069,693	212,728	750	19.9	463,389
1922	1,695	1,246,837	289,248	736	23.2	454,364
1923	1,877	1,515,110	301,096	807	19.9	597,630
1924	1,706	1,251,343	259,139	734	20.7	430,702
1925	1,757	1,376,628	250,774	783	18.2	537,239
1926	1,656	1,297,889	236,702	784	18.2	516,588
1927	1,610	1,237,832	266,356	769	21.5	[2]
Per cent change, 1927 from 1926	−2.8	−4.6	+12.5	−1.9	+18.1	----------

[1] Census figures for 1924 and 1919 relate to Jan. 1; for 1909, to Apr. 15; and for 1899, to June 1; while the Department of Agriculture estimates all relate to Dec. 1.

[2] Total for 9 months ending March, 406,887,395 pounds in 1926–27 and 377,497,538 pounds in 1927–28.

Sources: Bureau of Agricultural Economics, Department of Agriculture; Bureau of the Census and Bureau of Foreign and Domestic Commerce, Department of Commerce.

A concentration on quality by American growers seems desirable, as better grades are less susceptible to foreign substitution. The brunt of European competition with American tobaccos at present is

being borne by the low grades, especially the low grades of dark tobacco.

Over two-thirds of the tobacco crop of 1927 was produced in three States—North Carolina, Kentucky, and Virginia. As a tobacco producer North Carolina held paramount position among all the States in 1926 and 1927. This position belonged to Kentucky from 1870 to 1925, but the phenomenal increase in the consumption of cigarettes, which require in part the type of tobacco produced in North Carolina, and a decreased foreign demand for the dark tobaccos of Kentucky has changed the respective positions of the States. Tennessee, usually one of the four big producers, had a crop in 1927 of only 71,000,000 pounds compared with 106,000,000 pounds in 1926. Production in South Carolina and Georgia increased in 1927 as a result of the strong demand for cigarette tobaccos.

Table 48.—Tobacco: Acreage, Production, and Value, by States

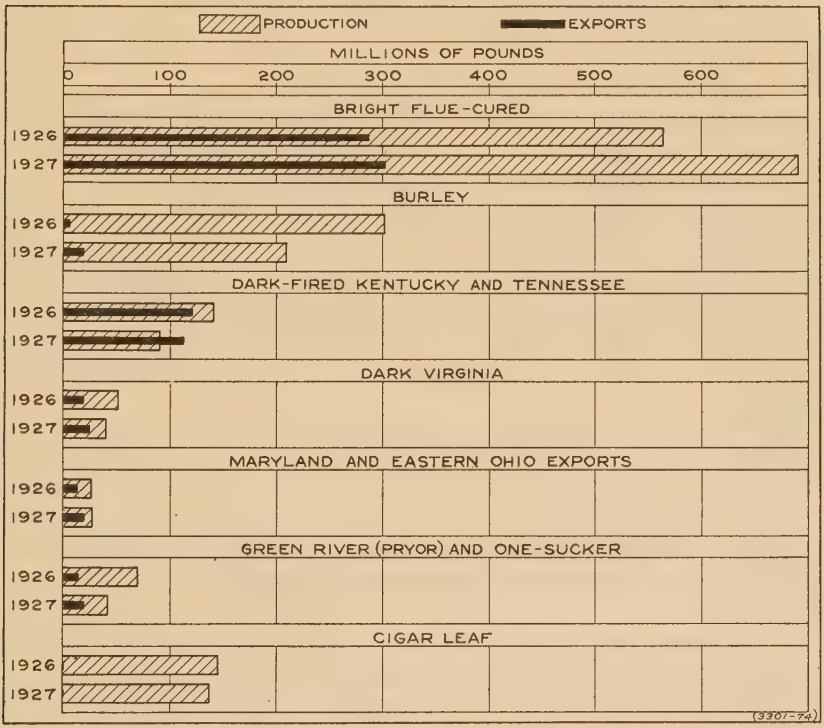
State	Acreage (1,000 acres)			Production (1,000 pounds)			Farm value, Dec. 1 (1,000 dollars)		
	1921–1925, average	1926	1927	1921–1925, average	1926	1927	1921–1925, average	1926	1927
United States	**1,692**	**1,656**	**1,610**	**1,291,922**	**1,297,889**	**1,237,832**	**262,597**	**236,702**	**266,356**
Massachusetts	9	7	7	11,750	9,412	8,683	3,813	3,294	3,213
Connecticut	29	22	24	38,812	29,346	28,886	13,867	10,447	10,399
New York	2	1	1	2,304	1,320	960	552	251	173
Pennsylvania	43	33	33	58,386	43,560	44,880	9,244	4,574	5,834
Ohio	49	44	29	42,889	37,389	24,012	7,073	3,776	3,746
Indiana	19	15	8	17,054	12,995	6,384	2,753	1,261	1,085
Wisconsin	40	29	31	46,980	33,350	31,620	6,800	4,602	6,008
Missouri	5	5	4	4,442	4,750	4,400	1,175	712	968
Maryland	28	31	32	21,833	26,040	26,176	4,864	6,171	4,973
Virginia	198	189	178	133,092	137,032	129,940	27,087	24,118	26,033
West Virginia	9	10	8	6,868	8,500	6,000	1,475	1,114	1,170
North Carolina	517	565	650	316,277	,386,460	468,000	79,633	102,025	120,744
South Carolina	91	85	104	59,178	56,780	75,920	10,406	13,230	15,564
Georgia	30	52	82	20,879	39,963	59,088	4,501	9,591	11,463
Florida	5	6	9	4,303	5,808	8,228	1,735	2,195	2,880
Kentucky	490	426	320	411,920	358,568	242,820	70,190	38,008	40,065
Tennessee	126	136	91	94,501	106,216	71,435	17,184	11,153	12,858
Louisiana	1	1	1	454	400	400	245	180	180

Source: Bureau of Agricultural Economics, Department of Agriculture.

The general purpose types of tobacco are classified into flue-cured, fire-cured, and air-cured groups, while the cigar types consist of fillers, binders, and wrappers. Flue-cured tobaccos are cured very quickly by means of artificial heat from terra-cotta pipes and flues inside the curing barn. The fire-cured group is cured inside of barns where the heat and smoke from certain kinds of wood come in direct contact with the leaves. Air-cured tobaccos are usually permitted to start the curing process on outdoor scaffolds built in the sun, the operation being completed inside of barns with special ventilating arrangements.

There is much overlapping as to regions of production of the various types, but most of the cigarette and cigar tobaccos grow in the States on or near the Atlantic coast. Important exceptions are the cigar tobaccos produced in Wisconsin and Ohio, and also the Burley, a Kentucky product which enters extensively into the manufacture of certain domestic brands of cigarettes. Production of dark tobaccos is confined to the States of Kentucky, Tennessee, and Virginia, and in that concentrated producing area the adversities experienced by the dark-tobacco industry during the past few years

Chart XVII.—PRODUCTION AND EXPORTS OF TOBACCO, BY TYPES



have been felt acutely by the growers. Air-cured tobaccos enjoy a greater latitude in production area than any other type.

The Available Supply.

The crop of 1927 was supplemented by 102,728,000 pounds imported from foreign countries and 30,862,000 pounds shipped from Porto Rico and Hawaii, making an increase of 1,371,422,000 pounds to the supply on hand at the beginning of the year. According to information compiled in the Bureau of the Census from reports of dealers, large manufacturers, and bonded warehouses, the aggregate stocks of raw tobacco on hand January 1, 1927, amounted to

1,842,000,000 pounds. Complete accuracy is not claimed for this figure, since no allowance has been made for shrinkage, which varies from 10 to 15 per cent during the first year, with an additional 3 per cent during the second year, and no account is taken of losses occasioned by fire or otherwise; nevertheless, it indicates the approximate volume of stocks carried by the United States tobacco industry. Stocks of the several types vary in direct ratio to their production and at least 5 per cent of the aggregate amount on hand consists of imported tobaccos.

Distribution.

Over a period of years (1923–1927) domestic consumption accounted for 52 per cent of the production, exports for 38 per cent, and 6 per cent was added to stocks in warehouses. In view of the many factors influencing shrinkage and waste, no accurate information is available concerning the quantities thus lost which account for the remainder of the production.

Distribution of the tobacco crop is an overlapping process, continuing uninterruptedly throughout the years. The harvest is in the autumn, but the crop does not entirely leave the growers' hands until the following February or March, and a period of two or three years intervenes before the raw material actually enters trade circulation as a finished product. For these reasons data for a short period do not reflect the entire situation as to distribution.

Consumption.

Viewed over a period of years, the outstanding feature is the steady increase in domestic consumption. Exports have been subject to fluctuation brought about by the various factors affecting foreign trade, but since 1921 the amount of leaf tobacco consumed in domestic factories has been characterized by a continuous upward trend. (Table 49.)

The estimated consumption in registered factories of the country in 1927 amounted to 717,665,000 pounds, the greatest in the history of the industry. In addition, 16,073,000 pounds of imported tobacco were consumed in bonded manufacturing warehouses. (Table 53.) The warehouses use only imported tobacco, are under supervision of the Government, and, with the exception of cigars, manufacture products for export only.

Exports.

Further distribution of the leaf tobacco crop of 1927 was made in the form of exports amounting to 511,868,000 pounds. Shipments to the noncontiguous territories of Porto Rico and Alaska, accounted also for 3,627,000 pounds. Reexports of foreign tobaccos amounted to 1,491,000 pounds in 1927.

Stocks.

In 1927 warehouse stocks were increased by 79,000,000 pounds. Statistics of stocks of growers and small manufacturers are not available.

Table 49.—Production, Consumption, and Exports of Tobacco

[Quantity in thousands of pounds. Consumption includes imported tobacco but not tobacco used in bonded factories manufacturing for export]

Calendar year	Production	Consumption of leaf in domestic manufacture	Exports of unmanufactured [1]	Ratio to current year's production (per cent)		Ratio to previous year's production (per cent)	
				Consumption	Exports	Consumption	Exports
1918	1,439,071	664,974	406,827	46.2	28.3	53.2	32.6
1919	1,465,481	625,862	776,678	42.7	53.0	43.5	54.0
1920	1,582,225	621,864	479,900	39.3	30.3	42.4	32.7
1921	1,069,693	587,391	522,756	54.9	48.9	37.1	33.0
1922	1,246,837	619,517	441,856	49.7	35.4	57.9	41.3
1923	1,515,110	662,064	497,347	43.7	32.8	53.1	39.9
1924	1,251,343	669,103	575,398	53.5	46.0	44.2	38.0
1925	1,376,628	692,099	477,488	50.3	34.7	55.3	38.2
1926	1,297,889	712,557	487,058	54.9	37.5	51.8	35.4
1927	1,237,832	717,665	511,868	58.0	41.4	55.3	39.4

[1] Includes stems, trimmings, and scraps.

Sources: Bureau of Agricultural Economics, Department of Agriculture; Commissioner of Internal Revenue, Department of the Treasury; and Bureau of Foreign and Domestic Commerce, Department of Commerce.

PRODUCTION AND CONSUMPTION OF MANUFACTURED TOBACCO

The tobacco-manufacturing industry, according to census statistics shown in Table 50, expanded considerably in the period from 1899 to 1914. In the years since the war there has, however, been a relatively large growth in the industry; although the number of wage earners and the amount of horsepower in prime movers has declined. This growth has been much larger than is indicated by the statistics, as returns from small establishments have been omitted since 1919 and there has also been a marked increase in the per capita production of factory employees.

Table 50.—Tobacco Manufactures (Census Statistics)

Year	Number of establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				1,000 dolls.	*1,000 dolls.*	*1,000 dolls.*	*1,000 dolls.*
1899	14,959	132,526	22,296	47,975	92,867	263,713	170,846
1904	16,827	159,406	24,604	62,639	126,086	331,111	205,025
1909	15,822	166,810	28,514	69,355	177,186	416,695	239,509
1914	13,951	178,872	34,756	77,856	207,134	490,165	283,031
1919	10,291	157,097	43,390	123,988	483,567	1,012,933	529,366
1921 [1]	4,372	149,985	(2)	120,903	608,689	1,048,490	439,801
1923 [1]	3,672	146,337	43,515	120,462	515,865	1,044,192	528,327
1925 [1]	2,623	132,132	42,075	111,558	425,769	1,091,001	665,232

[1] Exclusive of establishments valued at less than $5,000 included in previous years.
[2] Not called for on schedule.

Source: Bureau of the Census.

Cigarettes.

The year 1927 closed with the cigarette in greater predominance than ever before, as production in registered factories climbed to 97,188,000,000, the highest point of an uninterrupted ascent since 1921, and there were 5,156,000,000 cigarettes manufactured in bonded warehouses from imported tobacco and made exclusively for export (Table 51.)

The great increase in cigarette consumption of the United States during the past few years is unquestionably owing in part to an increase in the number of smokers. The per capita consumption has shown a marked increase from year to year, rising from 575 in 1923 to 798 in 1927.

Table 51.—Production of Manufactured Tobacco and Snuff, Cigars, and Cigarettes in Registered Factories

Yearly average or year (calendar)	Manufactured tobacco and snuff	Cigars		Cigarettes
		Large	Small	
	1,000 pounds	*Millions*	*Millions*	*Millions*
1891–1895	267,967	[1] 4,340	([2])	3,588
1896–1900	285,798	[1] 5,021	([2])	4,198
1901–1905	346,841	6,513	717	3,235
1906–1910	413,054	6,883	1,060	6,209
1911–1915	437,346	7,088	1,054	14,818
1916–1920	456,584	7,365	810	41,592
1921–1925	409,457	6,692	557	65,921
1921	386,951	6,726	670	52,100
1922	419,506	6,722	633	55,780
1923	412,777	6,950	505	66,734
1924	414,178	6,598	531	72,725
1925	413,873	6,463	447	82,265
1926	410,596	6,499	412	92,110
1927	394,075	6,571	436	97,188

[1] Includes small cigars. [2] Included in total for "large cigars."

Source: Commissioner of Internal Revenue, Department of the Treasury.

Leaf tobacco consumed in the manufacture of cigarettes in 1927 amounted to 282,335,000 pounds, or nearly two-fifths of the leaf tobacco consumed in the entire manufacturing industry. (Table 52.) About 70,000,000 pounds of the leaf used in cigarette manufacture were imported from the Balkan States for the purpose of blends. Imports of cigarette leaf were 93 per cent greater in 1927 than in 1926. The types of domestic tobacco that enter into cigarette manufacture are the flue-cured varieties of the Carolinas, Virginia, and Georgia, and the light grades of Burley.

The cigarette industry is the most highly concentrated of all United States tobacco manufactures, as reports of the Bureau of Internal Revenue showed on January 1, 1926, only 143 factories engaged in the manufacture of cigarettes out of 10,022 factories operating. More than one-half of the cigarette factories are in the State of New York, but the State of North Carolina, with only 6 factories, produces over one-half the cigarettes.

Table 52.—Leaf Tobacco: Amounts Consumed in Manufacture (on Basis of Estimated Weight Unstemmed)

NOTE.—Beginning with 1922 the Commissioner of Internal Revenue changed the method of computing the unstemmed weight of the tobacco consumed in stemmed form in making cigars and cigarettes. Prior to that time the computation had been made on the assumption that 3 pounds of stemmed tobacco represented 5 pounds of unstemmed. The new basis adopted was 3 pounds of stemmed to 4 pounds of unstemmed tobacco, which is considered more accurate. In order to present figures for earlier years comparable with those for later years a recalculation has been made, using the new basis. Production in bonded manufacturing warehouses is excluded throughout the table.

[All figures, except percentages, in thousands of pounds]

Calendar year	Consumption of unstemmed leaf in—				Per cent of total consumption used for—		
	Total	Tobacco and snuff	Cigarettes	Cigars	Tobacco and snuff	Cigarettes	Cigars
1919	625,862	307,576	166,783	151,503	49.1	26.6	24.2
1920	621,864	306,360	146,907	168,597	49.3	23.6	27.1
1921	587,391	285,827	158,336	143,228	48.7	27.0	24.4
1922	619,517	298,211	169,597	151,709	48.1	27.4	24.5
1923	662,064	301,916	200,395	159,753	45.6	30.3	24.1
1924	669,103	297,990	217,700	153,413	44.5	32.5	22.9
1925	692,099	298,783	244,315	149,001	43.2	35.3	21.5
1926	712,557	292,602	267,584	152,372	41.1	37.6	21.4
1927 [1]	717,665	280,829	282,335	154,501	39.1	39.3	21.5

[1] Estimated.

Source: Commissioner of Internal Revenue. Department of the Treasury.

Production costs in the cigarette industry remain fairly stable, owing to mass production and the fact that manufacturers average the cost of their raw material over several years. Thus price fluctuations of leaf affect the industry only in a small way. The expense of advertising is a constantly increasing factor, but this is an expenditure usually offset by increased sales. In view of the keen competition, it has become especially difficult to introduce new brands without heavy advertising costs; however, the year 1927 witnessed the introduction of several new American brands.

Cigars, Manufactured Tobacco, and Snuff.

Production of cigars in 1927 amounted to 7,007,000,000 in number, an increase of 1.4 per cent over the production in 1926. For several years the cigar industry has suffered in competition with the cigarette. Production in 1925 and 1926 dropped below that of any year since the war. A reduction of about 25 per cent in the internal-revenue tax in 1926 was a material aid and the installation of cigar machinery by several of the large companies manufacturing medium-priced cigars has done much toward solving their problems.

Snuff factories in 1927 showed a surprising output of 40,155,000 pounds compared with 38,105,000 pounds in 1926. On the other hand, a sharp decline was registered in the production of manufactured tobacco, which amounted to only 353,920,000 pounds in 1927 compared with 371,971,000 pounds in 1926. This decline is owing to the reduced production of chewing tobacco, whereas smoking tobacco has shown a fairly steady increase.

Table 53.—Consumption of Tobacco on Unstemmed Leaf Basis

[In thousands of pounds calculated throughout on the revised basis adopted in 1922; see Table 52]

Item	1921	1922	1923	1924	1925	1926	1927
Leaf tobacco consumed in manufacture:							
In registered factories	587,391	619,517	662,064	669,103	692,099	712,557	717,665
In bonded manufacturing warehouses	18,209	29,379	34,305	28,589	18,519	19,059	16,073
Add manufactured tobacco imported	4,678	6,428	8,915	7,429	8,152	7,423	6,465
From Porto Rico	2,430	3,312	3,878	3,535	4,151	3,564	2,967
Other countries	2,248	3,116	5,037	3,894	4,001	3,859	3,498
Subtract exports of manufactured tobacco	35,957	41,066	41,907	37,060	29,726	33,834	26,356
Remaining for consumption	574,325	614,258	663,377	668,061	689,044	705,205	713,847
Per capita consumption—pounds	5.30	5.59	5.94	5.87	5.97	6.02	6.02

Sources: Commissioner of Internal Revenue and Division of Customs, Department of the Treasury Bureau of Foreign and Domestic Commerce, Department of Commerce.

Tobacco Taxes.

The total Government receipts from tobacco in 1927 amounted to $427,444,000 and the per capita tax was $3.60. (Table 54.) More than 90 per cent of the total receipts accrued from internal-revenue collections, which amounted to $387,428,000; import duties were collected to the amount of $40,016,000. The burden of the tax, as in 1925 and 1926, was borne chiefly by users of cigarettes, who paid over two-thirds of the tobacco tax for the year. Manufactures of tobacco rank next to the income tax as a source of Federal internal revenue.

Table 54.—Government Receipts from Tobacco

[In thousands of dollars, except per capita]

Yearly average or year (calendar)	Total		Import duties	Internal revenue		Class	Amount of internal revenue		
	Amount	Per capita		Amount	Per capita		1925	1926	1927
1909–1913 [1]	89,880	$0.96	25,175	64,705	$0.69	Cigars	44,005	28,182	23,644
1921	307,475	2.84	35,950	271,525	2.50	Cigarettes	240,007	268,445	291,621
1922	316,719	2.88	31,789	284,930	2.59	Manufactured tobacco and snuff	73,823	73,833	70,941
1923	353,372	3.16	35,831	317,541	2.84	Miscellaneous	2,289	1,218	1,222
1924	368,602	3.24	33,941	334,661	2.94				
1925	395,552	3.43	35,428	360,124	3.12				
1926	409,754	3.49	38,076	371,678	3.17				
1927	427,444	3.60	40,016	387,428	3.27				

[1] Fiscal years.

Sources: Commissioner of Internal Revenue, Department of the Treasury; Bureau of Foreign and Domestic Commerce, Department of Commerce.

MARKET CONDITIONS

As a whole, the outstanding features of the United States tobacco market of 1927 were favorable, yet there was localized depression among the growers. There was a domestic disappearance of leaf 5,000,000 pounds greater than in 1926, and exports increased 25,000,000 pounds, although the crop of 1927 was smaller by

60,000,000 pounds than in 1926. Farm prices on December 1 were, on the average, 3.3 cents higher.

Cigarette tobaccos enjoyed an increased production, increased domestic consumption, and increased sales abroad. The continued upward trend of cigarette consumption in the United States as well as in many foreign countries kept the prices of cigarette tobaccos firm throughout the year. Dark fired tobaccos, on the contrary, on account of a short crop and strong competition in Europe, sold for less on the foreign markets than at home, and the increased foreign trade in these types was effected by lowered prices.

The year 1927 marked the partial disintegration of another one of the cooperative associations. Having failed to secure the required 75 per cent of farmers' signatures necessary to a contract renewal, the Burley Tobacco Growers Cooperative Association on December 5 opened its warehouse floors for loose-leaf sale of the 1927 crop at auction. The loose-leaf market was practically closed by the middle of February. The market was lively throughout. Final returns showed a crop of less than 210,000,000 pounds, a quantity below the estimates, and resales were unusually heavy owing to the opportunity afforded by continuously rising prices. The loose-leaf market closed with a seasonal average of about $27 per hundred, a price reflecting the results of a short crop and a firm demand for Burley tobaccos.

Prices of Green River ranged around $9 per hundred and most of the crop was bought by manufacturers and against firm orders for export. Demand for one-sucker tobacco seems to be diminishing, owing possibly to the decrease in demand for chewing tobacco.

Most of the Maryland crop was bought by French buyers on the Baltimore market, who took not only their usual grades but also cigarette tobaccos at good prices.

FOREIGN TRADE

Leaf Export Markets.

The United States export trade in leaf tobacco exceeded a half billion pounds during 1927, thus marking the year as one of the four outstanding ones in the history of the American tobacco industry. Exports in 1927, including stems, trimmings, and scrap tobacco, amounted to 511,868,000 pounds valued at $139,667,000. (Table 55.) This represents the heaviest exportation of raw tobacco since 1924, when exports totaled 575,398,000 pounds, valued at $164,130,000.

In view of the fact that Europe, China, Australia, Japan, and Canada absorb most of the United States leaf-tobacco exports, whatever occurs in the markets and movements of tobacco in those countries is of vital importance to every branch of the American tobacco industry. (Table 56.) Europe, which in 1927 took 72 per cent of American leaf exports, has been the leading market since the

inception of the industry. The trends of consumption in Europe as a whole run very similar to those in the United States, although there may be marked local differences attributable to latitude.

Table 55.—Domestic Exports of Unmanufactured [1] and Manufactured Tobacco

Yearly average or year (calendar)	Quantity				Value				
	Unmanufactured	Smoking and chewing	Cigars and cheroots	Cigarettes	Unmanufactured	Total manufactured [2]	Smoking and chewing	Cigars and cheroots	Cigarettes
	1,000 pounds	*1,000 pounds*	*Thousands*	*Millions*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
1910–1914	392,183	7,904	1,752	1,786	44,788	[3] 5,511	2,410	43	2,823
1919	776,678	11,888	50,056	16,212	259,986	46,876	6,006	1,089	38,070
1920	479,900	10,073	52,361	15,834	245,532	43,162	5,075	1,146	35,977
1921	522,756	10,244	4,127	8,544	205,133	20,966	3,493	123	16,780
1922	441,856	5,096	689	11,470	146,489	26,810	2,707	21	23,838
1923	497,347	4,628	1,070	12,253	153,438	25,769	2,525	34	23,085
1924	575,398	4,790	680	10,496	164,130	22,057	2,459	25	19,408
1925	477,488	4,863	970	8,146	153,787	17,516	2,344	33	15,043
1926	487,058	4,687	[4]	9,539	136,919	20,499	2,417	[4]	17,898
1927	511,868	4,862	[4]	7,093	139,667	16,527	2,584	[4]	13,837

[1] Includes stems, trimmings, and scrap.
[2] Includes small miscellaneous items.
[3] Fiscal years.
[4] Not shown separately.

Source: Bureau of Foreign and Domestic Commerce.

Table 56.—Exports of Leaf Tobacco,[1] by Country of Destination

[Quantity in thousands of pounds; value in thousands of dollars. Calendar years]

Country	Quantity				Value			
	1924	1925	1926	1927	1924	1925	1926	1927
Total	**546,555**	**468,471**	**478,773**	**506,235**	**163,035**	**153,351**	**136,676**	**139,405**
Belgium	24,442	14,255	21,592	26,159	3,217	2,310	2,243	2,435
Denmark	4,962	6,222	4,455	5,928	1,043	1,298	942	901
France	41,803	21,723	49,573	38,082	5,716	2,894	4,256	3,603
Germany	44,165	21,587	27,854	31,387	7,139	5,125	5,416	5,915
Irish Free State	(2)	1,452	3,080	1,945	(2)	232	362	541
Italy	16,846	11,263	5,814	3,262	3,723	2,877	1,383	648
Netherlands	41,625	20,803	29,566	27,409	5,671	4,868	5,602	4,395
Norway	4,964	3,472	3,664	4,266	1,427	976	1,106	1,215
Portugal	5,323	2,329	3,741	6,177	718	364	458	893
Spain	31,931	15,031	1,483	20,829	2,907	1,300	76	1,110
Sweden	5,964	1,499	4,355	3,187	1,582	483	1,056	618
Switzerland	1,919	2,060	3,523	3,294	429	576	888	799
United Kingdom	[3] 159,697	171,115	149,720	182,542	[3] 84,590	84,405	67,340	79,278
Canada	15,708	11,956	15,508	15,370	4,591	3,417	4,239	4,208
China	72,014	82,598	85,792	51,306	17,122	19,100	20,542	9,344
Japan	11,921	7,793	7,233	9,996	5,087	3,299	2,379	4,290
Australia	20,652	22,577	23,356	19,812	7,707	8,333	8,895	7,278
British West Africa	9,125	11,324	8,518	9,819	2,535	2,969	2,073	1,904
French Africa	7,806	5,718	6,228	7,452	1,465	1,144	1,094	999
Other countries	25,688	33,694	23,718	38,013	6,366	7,381	6,326	9,031

[1] Excludes stems, trimmings, and scrap.
[2] Included in United Kingdom.

Source: Bureau of Foreign and Domestic Commerce.

In the United Kingdom, the world's greatest importer of tobacco as well as the greatest importer of American tobacco, consumption has increased considerably since 1918. While no statistics are available as to the type of consumption prevailing in the United

Kingdom, it is unofficially estimated that cigarettes represent about three-fourths of the total. In Germany, which ranks second among the world's leaf importers, consumption of cigarettes increased from 23,000,000,000 in 1918 to 29,000,000,000 in 1926, and consumption of smoking tobacco showed an even greater increase.

The total exports of leaf tobacco from the United States to Europe in 1927 amounted to 366,000,000 pounds, an increase of 15 per cent over 1926. Over half of the European trade is in cigarette tobaccos; dark tobaccos rank second, 112,000,000 pounds of darks going to that region in 1927 compared with 119,000,000 pounds in 1926. (Table 57.) Maryland tobaccos have as yet no other market of consequence. Burley tobacco has been heretofore almost entirely a domestic type, but in 1927 approximately 14,000,000 pounds were sold in Europe. Though Burley is not substituted for flue-cured tobaccos in domestic brands, the use of Burley cigarette grades is increasing.

Table 57.—Exports [1] of Principal Types of Tobacco, by Principal Countries of Destination

[Quantity in thousands of pounds; value in thousands of dollars. Calendar years]

Type and country	Quantity				Value			
	1924	1925	1926	1927	1924	1925	1926	1927
Bright flue-cured	265,515	278,279	287,334	302,372	108,089	109,979	102,607	109,204
United Kingdom [2]	121,040	131,034	125,964	166,655	70,279	71,470	60,660	75,639
China [3]	59,120	81,091	83,319	45,865	14,466	18,931	20,293	8,789
Australia	17,093	19,638	20,843	17,247	6,463	7,334	8,070	6,758
Canada	11,167	9,445	13,517	13,037	2,946	2,382	3,482	3,416
Germany	16,743	5,988	12,385	12,809	2,771	1,089	2,071	2,092
Japan	11,208	7,741	7,188	9,991	4,855	3,278	2,369	4,289
Netherlands	10,968	4,086	6,558	7,189	1,610	1,016	1,087	1,139
Java and Madura	359	3,016	4,666	9,223	96	781	1,251	2,410
Dark-fired Kentucky and Tennessee	170,228	116,974	119,847	112,008	26,401	22,955	18,561	14,759
France	33,527	12,253	32,823	20,769	3,734	1,305	2,495	1,501
Spain	31,104	15,025	1,479	19,423	2,846	1,299	75	1,032
Belgium	12,858	6,639	14,411	13,956	1,215	983	1,269	1,053
Germany	17,805	11,471	10,453	10,027	2,491	2,429	1,919	1,608
United Kingdom [2]	17,925	22,023	15,734	9,149	5,055	5,689	3,321	1,861
Netherlands	13,852	9,071	13,611	8,039	1,831	2,246	2,960	1,908
British West Africa	5,111	7,059	4,399	5,425	1,502	1,970	1,129	1,286
Dark Virginia	31,071	20,343	18,390	24,302	10,497	7,718	6,149	5,178
Germany	3,585	3,621	3,571	5,493	1,001	1,509	1,153	1,696
Netherlands	2,726	2,971	2,810	2,807	503	766	669	374
Australia	3,144	2,912	2,480	2,336	1,086	989	815	448
Norway	2,285	1,506	1,880	2,020	827	517	646	545
China [3]	4,137	497	70	1,774	1,014	84	7	204
France	313	232	514	1,631	50	60	78	292
United Kingdom [2]	6,527	4,889	3,626	1,357	3,734	2,704	2,083	363
Green River (Pyror) and one-sucker	16,085	17,971	14,076	19,199	2,888	3,906	2,576	2,740
United Kingdom [2]	6,093	9,018	3,638	4,633	1,859	2,326	861	1,146
British West Africa	446	2,798	3,122	3,434	97	651	709	633
China [3]	2,568	2,286	2,663	1,025	245	242	283	102
Maryland and Ohio exports	12,831	13,913	13,592	20,036	2,687	2,622	2,108	2,923
France	6,196	6,404	5,514	8,957	1,489	1,249	736	1,202
Netherlands	3,663	2,947	4,595	5,317	533	523	572	539

[1] Excludes stems, trimmings, and scrap.
[2] Includes Irish Free State in 1924.
[3] Includes Hong Kong and Kwantung.

Source: Bureau of Foreign and Domestic Commerce.

The decreased exportation of Kentucky and Tennessee dark tobaccos has its underlying reason in the increased production of leaf tobacco in the British Colonies and the substitution of these types for

American dark types in European markets. Dark-tobacco markets of Africa and other consuming countries show improvement. The dark-tobacco growers of Kentucky and Tennessee have curtailed their production, the dark-fired crop in 1927 amounting to only 91,000,000 pounds compared with 139,000,000 pounds in 1926. (Table 58.) About one-half the Green River crop was exported in 1927 and 41 per cent of the one-sucker crop. Europe is the principal buyer of both types, though West Africa is a growing market.

The leaf trade with China, which has been for many years the second market for American tobacco, was materially affected by internal disorders of that country in 1927, when exports declined to 51,000,000 pounds from an average of 80,000,000 pounds during the years 1924 to 1926. As the Chinese demand is almost entirely for cigarette tobaccos which find ready markets in other foreign countries, the decreased trade with that country did not greatly affect the total American exports.

Australia, which is also an important market for American tobacco, takes on the average about 20,000,000 pounds annually, largely cigarette types. Owing to prohibitive climatic and soil conditions, Australia's attempts at producing tobacco have not been successful.

Table 58.—Production and Exports[1] of Leaf Tobacco, by Principal Types, Calendar Years

Quantity in thousands of pounds, value in thousand of dollars. Farm value is calculated from the average price for the season and does not agree with Dec. 1 farm value as given in Table 47]

Type	Quantity				Value			
	1926		1927		1926		1927	
	Production	Exports	Production	Exports	Production	Exports	Production	Exports
Total	1,297,889	478,773	1,237,832	506,235	236,904	136,676	270,786	139,405
Bright flue-cured	564,488	287,334	692,013	302,372	144,281	102,607	168,729	109,204
Burley	301,015	6,729	209,738	17,854	39,482	1,385	45,905	2,394
Dark-fired Kentucky and Tennessee	139,081	119,847	90,673	112,008	10,804	18,561	12,593	14,758
Dark Virginia	51,029	18,390	39,560	24,302	4,103	6,149	3,822	5,178
Maryland and eastern Ohio exports	26,640	13,592	27,026	20,036	6,261	2,108	5,126	2,923
Green River (Pyror)	39,997	14,076	26,640	12,829	2,960	2,576	2,291	1,932
One-sucker	30,754		15,503	6,370	1,740		1,500	809
Cigar leaf	144,485	619	136,279	531	27,093	442	30,640	459
Other leaf[2]	400	18,185	400	9,932	180	2,848	180	1,748

[1] Excludes stems, trimmings, and scrap.
[2] Exports contain Black Fats and Water Balers, which are oil-treated dark tobaccos.

Sources: Production and farm value, Bureau of Agricultural Economics, Department of Agriculture; exports, Bureau of Foreign and Domestic Commerce, Department of Commerce.

The salvaging of stems, trimmings, and scraps of the tobacco industry constitutes an important item of foreign trade (Table 59) and provides the basis for a substantial by-products industry within the United States. Stems enter largely into the manufacture of

snuff, nicotine, and tobacco extract. Trimmings and scrap are used in limited amounts in the manufacture of the cheaper brands of smoking and chewing mixtures. In 1927 Sweden and China were the principal buyers.

Table 59.—Exports of Stems, Trimmings, and Scraps, by Principal Countries of Destination

[Quantity in thousands of pounds; value in thousands of dollars. Calendar years]

Country	Quantity				Value			
	1924	1925	1926	1927	1924	1925	1926	1927
Stems, trimmings, and scrap	**28,843**	**9,017**	**8,285**	**5,633**	**1,095**	**436**	**242**	**263**
Belgium	1,337	908	559	167	64	88	35	7
Germany	9,411	1,775	3,049	597	348	51	82	33
Netherlands	12,730	276	260	226	470	12	10	10
Spain	2,441	1,492		6	115	88		(1)
Sweden	520	1,781	279	1,820	24	88	14	94
China	861	972	3,169	1,895	7	10	49	74
Other countries	1,543	1,813	969	922	67	99	52	45

[1] Less than $500.

Source: Bureau of Foreign and Domestic Commerce.

Foreign Markets for Tobacco Manufactures.

In of 1927 cigarettes represented 84 per cent of the total exports of all tobacco manufactures. Notwithstanding a substantial foreign trade in chewing and smoking tobacco, any considerable fluctuation in the total export trade in tobacco products is due to cigarettes. Thus difficulties in the Chinese cigarette market in 1927 were sufficiently grave to reduce total exports of American tobacco products to $16,527,000, a decline of nearly 20 per cent.

There is as yet no foreign cigarette market which ranks as a comparable second to that of China; however, the American cigarette industry depends only slightly upon export markets. The situation in China has been one of gradual development and manufacturers have had time to gauge their production in accordance with a declining market. No new cigarette markets of major importance developed in 1927, although there was a consistent and healthy growth in trade with Panama, the Philippines, and France.

Plug tobacco, which ranks next to cigarettes in the export trade, enjoyed a substantial increase in exports during 1927 as compared with 1926, amounting to 3,728,000 pounds, valued at $1,856,000. This trade remains quite steady as a rule, the principal buyers being Australia, Canada, Philippine Islands, New Zealand, the United Kingdom, Cuba, and Panama.

Smoking-tobacco exports in 1927 amounted to 1,100,000 pounds, valued at $728,000, and reflected a slight increase over the trade of 1926. Canada is the most important foreign customer but took only 148,665 pounds in 1927.

Origin and Type of Imports.

Since no country produces a sufficient variety of tobacco to meet the requirements of its variously blended manufactured products, the leaf-import trade always increases with the successful expansion of the industry. The United States produces more tobacco than any other country in the world, and also a greater variety of types than any other country, yet the United States is among the world's great leaf importers. Imports of leaf tobacco (including shipments from Porto Rico) during the calendar year 1927 amounted to 133,590,000 pounds, a quantity exceeded only by imports into the United Kingdom and Germany. In 1926 the United States ranked fourth as an importer of leaf tobacco.

Prior to 1927 the cigar industry of the United States consumed from one-half to three-fourths of all the leaf tobacco imported. In 1927, owing to the facts that cigarette production increased to more than 102,000,000,000 (including the number manufactured in customs bonded warehouses), and cigar production did not increase much, the imports of cigarette tobaccos amounted to 70,000,000 pounds or more than one-half of the total leaf imports.

Compared with 1926, the imports of cigarette tobaccos in 1927 almost doubled. Greece and Turkey are the principal countries of origin, and with imports from those countries should be classified the imports from Italy, which are Near Eastern tobaccos manipulated in Trieste. (Table 60.)

Table 60.—Imports of Tobacco from Foreign Countries (Including the Philippines) and Shipments from Porto Rico into the United States

Product and country	Quantity (1,000 pounds)				Value (1,000 dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
IMPORTS FROM FOREIGN COUNTRIES								
Total unmanufactured	**68,589**	**77,690**	**67,906**	**102,728**	**75,362**	**71,464**	**60,570**	**74,613**
Leaf, suitable for cigar wrappers [1]	5,894	6,435	6,551	5,784	15,100	15,077	14,747	12,438
Leaf, cigar, unstemmed [1]	11,216	8,571	8,012	8,148	11,315	8,067	7,266	6,460
Leaf, cigar, stemmed [1]	11,415	12,725	14,659	15,395	14,911	14,244	15,350	13,719
Leaf, cigarette	36,965	47,025	36,159	69,820	33,134	33,281	22,519	41,207
Greece	20,748	22,958	13,704	29,909	21,528	20,396	11,420	23,118
Turkey in Asia	5,098	10,429	5,518	7,607	2,782	4,788	2,829	3,263
Turkey in Europe	1,897	1,657	4,294	13,350	1,593	794	2,701	6,631
Italy	5,183	10,312	10,764	17,570	3,487	6,227	4,369	7,214
Germany	1,751	892	729	896	2,188	740	536	529
Leaf from Philippine Islands	1,231	1,166	908	1,585	169	187	197	250
Scrap	1,868	1,769	1,616	1,997	733	608	491	540
Cigars and cheroots, total	3,568	3,743	3,446	3,058	8,075	9,464	8,356	7,884
Philippine Islands	3,159	3,226	3,021	2,645	4,693	5,133	5,047	4,142
Cuba	406	512	418	408	3,369	4,313	3,279	3,726
All other manufactured (including cigarettes)	326	258	413	439	444	420	562	487
SHIPMENTS FROM PORTO RICO TO UNITED STATES								
Unmanufactured	20,968	25,337	31,876	30,862	9,411	13,138	20,989	15,698
Cigars and cheroots (thousands)	175,075	207,110	177,501	147,555	6,124	7,739	4,898	3,936
Cigarettes (thousands)	11,295	2,850	4,625	5,227	116	29	40	52

[1] Practically all of the leaf tobacco suitable for cigar wrappers was imported from Netherland East Indies through Netherlands and that of stemmed and unstemmed cigar leaf from Cuba.

Source: Bureau of Foreign and Domestic Commerce.

The United States spends more money for tobacco in Cuba than in any other country, purchases from that country amounting to more than $25,000,000 annually. Between $3,000,000 and $4,000,000 of this sum is spent for fine Cuban cigars and the remainder for leaf tobacco averaging nearly $1 per pound in import value.

Shipments from Porto Rico, although not regarded as imports, can not be ignored as a trade factor. Tobacco from Porto Rico, used exclusively in the manufacture of cigars, represents the greatest volume of tobacco entering the United States from any country. Porto Rican tobacco, as well as Philippine tobacco, enters free of duty.

The most expensive leaf tobacco purchased anywhere in the world is the Sumatran wrapper type grown in the Netherland East Indies and bought by the United States on the Netherlands market. The import value of Sumatran wrapper averaged $2.14 per pound in 1927 as compared with $2.28 per pound in 1926.

The United States is not a large importer of tobacco manufactures. In fact, aside from the free purchases of cigars from the Philippine Islands and Porto Rico, the total import trade in tobacco products is confined to purchases of cigars from Cuba.

LIVESTOCK AND MEAT PRODUCTS

SUMMARY.—Meat production in federally inspected plants in 1927 was slightly less than in 1926, but was larger than in any other postwar year, excepting 1923 and 1924. This decrease was owing to a decline in beef and veal production, which was 8.3 per cent less than in 1926. Prices of cattle increased 28 per cent and were higher than in any year since 1920. Production of all pork products increased 6.3 per cent. While the production of pork was still considerably below that of the peak year 1923, it was the first time since the decline commenced that an increase over the previous year has been shown. Hog prices declined during 1927, and for the year the average price was 19 per cent lower than in 1926. Production of mutton and lamb showed a very slight increase over 1926, owing to increases in production in the last two quarters of the year.

The decline in exports of all principal meats, which has been apparent since 1923, continued during 1926. Pork exports in 1927 were only 39 per cent of the 1921–1925 average. The value of beef and veal exports declined 22 per cent, and exports of pork meats declined 39 per cent in value as compared with 1926. Exports of all the animal oils and fats, except neutral lard, decreased in 1927.

PRODUCTION AND CONSUMPTION

Census Statistics of Packing Industry.

The wholesale slaughtering and meat-packing industry (which does not include small plants slaughtering for direct retail trade) ranks second among our manufacturing industries when measured by the gross value of its products. As in other food industries, however, the cost of materials constitutes a very large proportion of the total value. Census statistics, shown in Table 61, indicate that the total value was 18 per cent higher in 1925 than in 1923, and there

were also increases in the value added by manufacture and the horsepower of prime movers. The average number of wage earners and the total wage payments, however, were smaller.

Table 61.—Wholesale Slaughtering and Meat Packing (Census Statistics)

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture	Dressed weight of animals slaughtered
				1,000 dollars	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000,000 pounds*
1899	882	68,386	85,008	33,392	682,097	783,779	101,682	8,895
1904	929	74,134	115,831	40,327	805,857	913,915	108,058	9,741
1909	1,221	87,813	201,697	50,404	1,191,438	1,355,544	164,106	10,371
1914	1,279	98,832	252,079	62,136	1,441,663	1,651,965	210,303	10,099
1919	1,304	160,996	358,522	209,489	3,782,930	4,246,291	463,361	13,435
1921	1,184	117,042	(1)	152,903	1,868,198	2,200,942	332,744	12,237
1923	1,397	132,792	382,127	167,569	2,176,010	2,585,804	409,794	15,641
1925	1,269	120,422	441,516	159,355	2,625,192	3,050,286	425,094	14,456

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Table 62.—Livestock on Farms

NOTE.—In 1925 the Census reported 3,370,218 goats.

Date	Value, all livestock (1,000 dollars) [1]	Number (thousands)						
		Horses	Mules	Dairy cows [2]	Other cattle	Sheep	Swine	Poultry [1]
CENSUS RETURNS								
June 1, 1870 [3]	1,229,890	7,145	1,125	8,935	14,885	28,478	25,135	----------
June 1, 1880	1,576,885	10,357	1,813	12,443	27,232	42,192	49,773	125,507
June 1, 1890	2,308,768	15,266	2,252	16,512	41,137	40,876	57,427	285,609
June 1, 1900	3,075,478	18,267	3,265	17,136	50,584	61,504	62,868	250,624
Apr. 15, 1910	4,925,174	19,833	4,210	20,625	41,178	52,448	58,186	295,880
Jan. 1, 1910 (est.)	----------	19,500 to 19,600	4,160 to 4,180	17,125	41,875 to 42,875	46,000 to 47,000	52,000 to 53,000	----------
Jan. 1, 1920	8,013,325	19,767	5,432	19,675	46,977	35,034	59,346	359,537
Jan. 1, 1925	4,858,389	16,401	5,681	17,645	43,115	35,590	50,854	409,291
DEPARTMENT OF AGRICULTURE ESTIMATES JAN. 1—								
1920	8,127,737	19,848	5,475	21,427	47,444	40,243	59,959	[4] 359,537
1921	6,053,128	19,134	5,586	21,408	45,776	38,690	58,711	370,600
1922	4,758,238	18,564	5,638	21,788	45,476	36,186	59,355	423,400
1923	5,048,049	17,943	5,702	22,063	44,093	36,212	68,447	439,900
1924	4,748,686	17,222	5,730	22,255	42,252	36,876	65,937	487,700
1925	4,675,355	16,470	5,725	22,498	39,498	38,112	55,568	[4] 409,291
1926	5,003,301	15,830	5,740	22,188	36,934	[5] 39,730	52,148	[4] 464,000
1927	5,078,418	15,145	5,679	21,818	34,354	[5] 41,846	54,408	(6)
1928	5,596,922	14,541	5,566	21,948	33,748	[5] 44,545	58,969	(6)

[1] Census figures include animals not specified and value of poultry in all years, Department of Agriculture estimates include only value of horses, mules, dairy cows, other cattle, sheep, and swine.

[2] The definition of dairy cows at the census of 1910 was different from that at other censuses. The distinction between dairy and other cows can not be sharply made, a fact which explains the disparity between census figures and those of the Department of Agriculture.

[3] Census of 1870 was probably incomplete in the South.

[4] Census figures.

[5] Includes estimates of sheep and lambs on feed for market in feed lots as well as on farms.

Sources: Bureau of the Census, Department of Commerce; Bureau of Agricultural Economics, Department of Agriculture.

Long Time Changes.

It is impossible to estimate closely the movement of meat production over a long period of time. It can not be determined from the number of animals on farms, because changes in the time of the year at which the censuses were taken make the earlier figures incomparable, and also because animals are brought to market at a younger age than formerly, and the weight of meat produced annually has increased relatively to the number of animals on farms. Table 62 indicates that at the present time the number of cattle (except dairy cows), sheep, and swine on farms is considerably less than a quarter of a century ago.

The long-term movement of meat production can not be determined accurately from the statistics of output in wholesale (federally inspected) plants for the reason that large numbers of animals are slaughtered on farms and in small establishments, and no recent data exist regarding such slaughter. There is a tendency toward increase in the proportion of total slaughter conducted in wholesale packing plants.

Table 63.—Estimated Livestock Slaughter and Meat Production

Yearly average or year	Animals slaughtered (thousands)				Meat produced (millions of pounds)					
	Cattle	Calves	Sheep and lambs	Swine	Total [1] (excluding lard)	Beef	Veal	Mutton and lamb	Pork (excluding lard)	Lard
Federally inspected:										
1909–1913	7,474	2,158	13,231	31,759	8,316	3,880	204	534	3,679	932
1914–1918	8,880	2,496	11,609	37,824	9,477	4,510	239	450	4,273	1,079
1919	10,091	3,969	12,691	41,812	10,577	4,736	377	469	4,991	1,323
1920	8,609	4,058	10,982	38,019	9,689	4,365	370	413	4,539	1,321
1921	7,608	3,808	13,005	38,982	9,671	4,082	366	493	4,730	1,379
1922	8,678	4,182	10,929	43,114	10,539	4,569	395	417	5,157	1,575
1923	9,163	4,500	11,529	53,334	11,923	4,682	443	446	6,351	1,971
1924	9,593	4,935	11,991	52,873	11,837	4,825	499	455	6,057	1,923
1925	9,853	5,353	12,001	43,043	11,179	4,935	541	467	5,235	1,452
1926	10,180	5,153	12,961	40,636	11,354	5,223	530	501	5,099	1,513
1927	9,520	4,876	12,883	43,633	11,272	4,783	493	502	5,495	1,557
Not federally inspected (estimated):										
1926	4,791	4,389	3,728	25,143	5,891	2,235	430	142	3,082	811
1927	4,480	4,154	3,706	25,617	5,600	2,043	374	143	3,038	799
Total:										
1926	14,971	9,542	16,689	65,779	17,245	7,458	960	643	8,181	2,324
1927	14,000	9,030	16,589	69,250	16,872	6,826	867	645	8,533	2,356

[1] Includes a small quantity of goat meat.

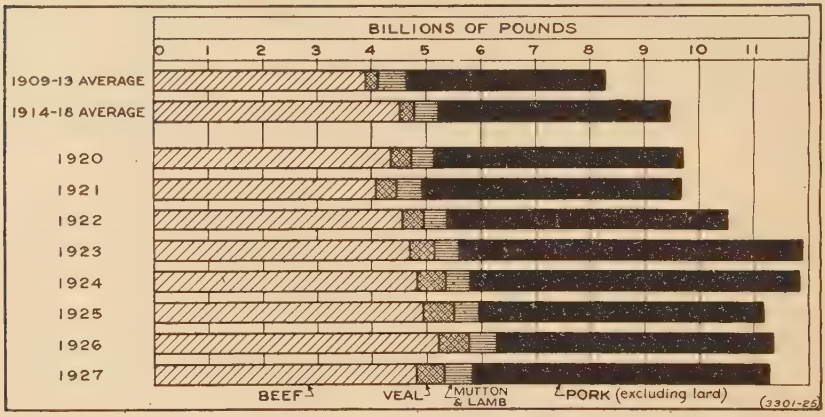
Source: Bureau of Animal Industry, Department of Agriculture.

It is certain, however, that the total production of meat during the last few years has been materially greater than before the war, and the increase has probably exceeded that in population. The average production in federally inspected plants (Table 63) for the five pre-war years was 8,316,000,000 pounds annually, while for the five years 1923 to 1927 the average was 11,513,000,000 pounds, or

38.4 per cent greater. The increase over pre-war appears in beef, veal, and pork, but not in mutton. (Chart XVIII.) However, mutton showed a steady increase from 1923 to 1927. This comparison probably exaggerates somewhat the gain in total meat production, including that not subject to Federal inspection.

Although exportation is an important factor in the meat industry, the great bulk of the product is consumed in this country. The per capita consumption of the United States is higher than that in most other countries. Estimating approximately the production on farms and in small plants, the Department of Agriculture calculates the total output of meat, excluding lard, in 1927, at 16,872,000,000

Chart XVIII.—PRODUCTION OF MEAT IN FEDERALLY INSPECTED PLANTS



pounds, representing a per capita consumption of 139 pounds, compared with 143 pounds in 1926.

Recent Tendencies of Production and Consumption.

The production of meat in federally inspected plants in 1927 (Table 63 and Chart XVIII) totaled 11,272,000,000 pounds, which was slightly less than the year before but materially greater than during the years from 1919 to 1922. This decrease from 1926 is attributed to beef and veal, the production of which was 8.3 per cent smaller, while mutton, which had increased in 1926 over 1925, showed little change in 1927. Pork production increased 7.8 per cent over the previous year. While the production of pork for 1927 was still considerably below that of the peak year of 1923, it is interesting to note that this is the first time since 1923 that an increase over the previous year has been shown.

The marketing of hogs is decidedly seasonal, being normally heaviest from October to February. (Table 66.) As consumption and exports are more nearly uniform, adjustment is made by means of large and decidedly varying stocks. The production of pork and lard was greater in every quarter of 1927 than in the corresponding quarters of the previous year.

Table 64.—Estimated Production, Exports, Imports, and Consumption of All Meats (Excluding Lard)

[In millions of pounds except per capita which is in pounds]

Calendar year	Slaughter (dressed weight)[1]			Exports	Imports (less re-exports)	Consumption[2]	
	Total	Federally inspected	Other			Total	Per capita
1907	14,680	8,690	5,990	971	----------	13,560	155.1
1908	14,396	8,666	5,730	862	----------	13,386	150.3
1909	14,362	8,402	5,960	651	----------	13,585	149.8
1910	13,648	7,836	5,812	437	----------	13,121	142.2
1911	14,454	8,727	5,727	584	----------	13,777	147.1
1912	13,749	8,349	5,400	518	----------	13,128	138.1
1913	13,729	8,267	5,402	518	36	13,149	136.2
1914	13,299	8,101	5,198	491	307	13,004	132.7
1915	13,816	8,849	4,967	1,309	147	12,389	124.8
1916	14,626	9,677	4,949	1,314	40	12,865	127.7
1917	13,932	9,438	4,494	1,310	36	12,273	120.1
1918	16,405	11,319	5,086	2,428	131	13,472	130.1
1919	16,006	10,577	5,429	2,169	72	13,654	130.0
1920	15,511	9,689	5,822	1,089	116	14,557	136.8
1921	15,182	9,671	5,511	819	46	14,448	133.3
1922	16,295	10,539	5,756	775	49	15,247	138.8
1923	17,912	11,923	5,989	1,005	33	16,639	149.0
1924	17,867	11,837	6,030	777	34	17,012	149.6
1925	17,005	11,179	5,826	592	30	16,565	143.6
1926	17,245	11,354	5,891	465	59	16,726	142.8
1927	16,872	11,272	5,600	352	114	16,526	139.3

[1] Includes small quantity of goat meat not given separately.
[2] Exports converted to dressed-weight equivalents before deduction. Adjustments made for quantities in storage annually from 1916.

Source: Bureau of Animal Industry, Department of Agriculture.

Table 65.—Pork and Lard: Production (Federally Inspected), Cold Storage Holdings, Exports, and Apparent Consumption

NOTE.—Production is that in *federally inspected plants only* (see Table 63 for estimated production in other plants) and consumption figures are computed from the production given by deducting exports to foreign countries as shown in the table, and also shipments to noncontiguous territories of the United States not shown in the table, adding the insignificant imports, and taking account of changes in cold-storage holdings. The annual totals of production represent the sum of the monthly figures as originally reported and do not agree exactly with revised totals published by the Department of Agriculture and given in Table 63.

[In millions of pounds]

Year and quarter	Pork and lard				Pork products other than lard		Lard	
	Production	Storage, end of period	Exports	Apparent consumption	Production	Exports[1]	Production	Exports
1920	6,473	593	1,537	5,006	(2)	924	(2)	612
1921	6,723	462	1,631	5,224	5,343	791	1,379	869
1922	7,419	619	1,487	5,777	5,844	720	1,575	767
1923	9,182	758	1,988	7,057	7,211	952	1,971	1,035
1924	8,820	708	1,674	7,201	6,897	751	1,923	944
1925	7,323	515	1,227	6,297	5,871	538	1,452	687
1926	7,273	523	1,120	6,154	5,759	421	1,513	699
1927	7,731	578	984	6,705	6,174	305	1,557	681
1926								
January–March	2,058	720	345	1,509	1,613	139	444	206
April–June	1,787	723	279	1,507	1,400	101	387	178
July–September	1,656	620	254	1,506	1,312	93	344	162
October–December	1,772	523	241	1,632	1,434	88	338	153
1927								
January–March	2,087	831	236	1,550	1,673	73	415	163
April–June	2,063	992	282	1,623	1,628	83	435	198
July–September	1,692	727	239	1,719	1,344	82	349	158
October–December	1,888	578	228	1,813	1,529	65	359	163

[1] Includes neutral lard.
[2] Figures revised, no comparable figure for 1920.

Sources: Bureau of Animal Industry, Department of Agriculture; Bureau of Foreign and Domestic Commerce, Department of Commerce.

Stocks in the first three quarters of 1927 were considerably higher than in the year 1926, but at the end of the year they were only 11 per cent higher. While stocks were higher than in either 1925 or 1926, they were considerably smaller than in the years 1922, 1923, and 1924. The apparent consumption of pork and lard in 1927 was 6,705,000,000 pounds. Consumption of pork products declined from 1923 to 1926, but increased 9 per cent in 1927.

Table 66.—Production and Apparent Consumption of Federally Inspected Pork and Lard, by Months

NOTE.—Apparent consumption calculated on basis of exports, imports, and changes in stocks. Products outside of federally inspected plants are not included.

[In millions of pounds]

Month	Production							Apparent consumption [1]						
	1921	1922	1923	1924	1925	1926	1927	1921	1922	1923	1924	1925	1926	1927
January	748	690	904	977	951	803	784	427	480	582	656	624	567	564
February	668	592	749	844	723	605	608	315	391	488	562	483	430	446
March	530	567	853	766	548	650	695	370	375	579	519	463	512	540
April	520	507	735	691	519	572	603	419	404	477	561	451	489	473
May	559	642	736	721	556	569	682	419	473	603	598	526	496	561
June	617	718	749	737	650	647	778	468	496	578	622	549	521	589
July	528	566	703	732	512	616	653	438	468	584	650	492	471	548
August	450	523	641	549	457	564	581	423	483	618	539	492	498	595
September	420	486	552	493	461	476	459	463	547	566	565	519	537	576
October	478	550	711	560	564	480	497	528	551	698	660	592	547	615
November	565	699	873	723	607	569	597	486	555	643	608	542	540	604
December	640	878	976	1,027	774	723	794	468	555	642	662	563	545	594

[1] In computing consumption the exports of neutral lard are disregarded, amounting in 1927 to 20,396,671 pounds.

Sources: Bureau of Animal Industry, Department of Agriculture; Bureau of Foreign and Domestic Commerce, Department of Commerce.

Table 67.—Stocks and Apparent Consumption of Federally Inspected Beef and Veal and Production of Federally Inspected Lamb

NOTE.—Production and consumption of meat not federally inspected is excluded. (See Table 63.) Apparent consumption is computed on basis of exports and imports and changes in cold-storage holdings. Both exports and imports in recent years are small. Cold-storage holdings of lamb are normally small and consumption conforms closely to production. The annual totals of production given represent sums of monthly figures as originally published and do not agree exactly with revised totals given in Table 63.

[In millions of pounds]

Year	Beef and veal			Mutton and lamb production	Quarter	Beef and veal			Mutton and lamb production
	Production	Stocks, end of period	Apparent consumption			Production	Stocks, end of period	Apparent consumption	
					1926				
1918	6,268	335	5,606	382	January–March	1,304	71	1,316	131
1919	5,387	299	5,179	462	April–June	1,404	49	1,425	117
1920	4,741	143	4,808	413	July–September	1,496	46	1,497	124
1921	4,453	85	4,501	493	October–December	1,553	101	1,498	129
1922	4,969	116	4,939	418					
1923	5,129	106	5,129	446	1927				
1924	5,328	143	5,282	456	January–March	1,282	77	1,303	126
1925	5,480	85	5,527	467	April–June	1,320	44	1,356	114
1926	5,757	101	5,736	501	July–September	1,337	36	1,352	128
1927	5,277	77	5,324	502	October–December	1,338	77	1,313	133

Sources: Bureau of Animal Industry, Department of Agriculture; Bureau of Foreign and Domestic Commerce, Department of Commerce.

The receipts of cattle are also decidedly seasonal; the heaviest run is usually in September and October, and there is also a subsidiary peak in May. Cold storage is therefore an important factor in equalizing supply. Each quarter of 1927 showed less production of beef and veal in federally inspected plants than the corresponding quarter of 1926. (Table 67.) Stocks at the end of 1927 were considerably less than at the end of 1926, and were smaller than at the end of any year in the past decade. While the consumption of beef and veal was comparatively high, it fell 7.2 per cent below the record levels of 1926. (Table 67.)

Production of mutton and lamb usually varies somewhat less from month to month than that of pork and beef. Production in the first two quarters of 1927 showed a decrease as compared with the previous year, while production in the last two quarters was larger and the total output for the year showed a very slight increase.

Receipts and Shipments.

The current changes in meat production at central points are reflected roughly in the receipts of animals at the principal markets, although such receipts involve a large and more or less varying duplication owing to reshipments either to other central markets or to farms for feeding purposes. The data are more significant in indicating short-time than long-time movements. Table 68 shows receipts at the nine principal markets since 1901, and Table 69 shows recent statistics for all reporting markets. The latter table indicates that receipts of hogs were a little larger in 1927, but a small decrease was shown in the receipts of cattle and calves.

Table 68.—Livestock Receipts and Shipments at Nine Principal Markets

NOTE.—The markets covered are Chicago, Denver, East St. Louis, Fort Worth, Kansas City, Omaha, St. Joseph, St. Paul, and Sioux City.

[All figures in thousands]

Yearly average or year	Cattle and calves		Sheep		Swine		Horses and mules, receipts
	Receipts	Shipments	Receipts	Shipments	Receipts	Shipments	
1901–1905	9,684	2,426	9,858	2,712	18,273	2,430	449
1906–1910	11,361	2,828	11,443	3,184	19,075	2,968	416
1911–1915	10,214	2,776	14,154	3,656	20,512	3,786	547
1916–1920	14,678	5,927	14,090	6,347	25,034	5,823	625
1921–1925	14,430	6,068	13,115	5,649	27,749	8,795	243
1921	12,150	5,350	13,580	5,297	22,798	6,983	186
1922	14,590	6,677	12,253	5,484	24,601	7,056	242
1923	15,013	6,484	13,192	5,879	32,320	9,597	302
1924	15,189	6,119	13,382	5,972	32,612	11,040	245
1925	15,206	5,709	13,167	5,615	26,415	9,300	242
1926	15,242	5,883	14,379	6,025	23,414	8,413	211
1927	14,019	5,454	13,556	5,507	23,616	8,007	247

Source: Bureau of Agricultural Economics, Department of Agriculture.

Table 69.—Livestock Receipts and Shipments at All Reporting Markets

NOTE.—Stocker and feeder shipments of hogs for the years 1921 to 1927 are as follows: 1921, 499,000; 1922, 593,000; 1923, 820,000; 1924, 496,000; 1925, 532,000; 1926, 917,000; and 1927, 922,000. All figures in table are expressed in thousands. The data cover from 64 to 76 markets.

Year and quarter	Cattle and calves				Hogs			Sheep and lambs			
	Receipts	Shipments		Local slaughter	Receipts	Shipments, total	Local slaughter	Receipts	Shipments		Local slaughter
		Total	Stocker and feeder						Total	Stocker and feeder	
1921	19,787	8,600	3,504	11,078	41,101	14,709	26,335	24,168	11,333	3,095	12,858
1922	23,218	10,665	4,864	12,435	44,068	15,332	28,737	22,364	11,677	4,167	10,669
1923	23,211	10,058	4,553	13,034	55,330	19,142	36,172	22,025	11,730	4,478	10,271
1924	23,695	9,691	3,978	13,850	55,414	20,203	35,188	22,201	11,794	4,676	10,399
1925	24,067	9,438	3,823	14,462	43,929	16,266	27,665	22,100	11,710	4,332	10,399
1926	23,872	9,404	3,712	14,350	39,772	15,173	24,580	23,868	12,450	4,623	11,387
1927	22,763	9,172	3,615	13,459	41,411	15,043	26,345	23,939	12,482	4,902	11,459
1926											
January–March	5,202	1,779	586	3,378	11,255	4,354	6,900	4,729	2,004	345	2,720
April–June	5,476	1,929	589	3,524	9,315	3,476	5,830	5,132	2,452	492	2,684
July–September	6,214	2,535	971	3,629	8,477	3,215	5,256	7,295	4,128	1,920	3,117
October–December	6,980	3,162	1,564	3,818	10,725	4,127	6,593	6,713	3,866	1,866	2,865
1927											
January–March	5,130	1,801	581	3,282	11,314	4,210	7,086	4,799	2,207	483	2,593
April–June	5,361	1,957	609	3,379	10,530	3,576	6,952	5,315	2,603	634	2,714
July–September	5,600	2,270	816	3,287	8,652	3,352	5,297	6,733	3,548	1,553	3,158
October–December	6,672	3,144	1,609	3,511	10,914	3,906	7,010	7,092	4,124	2,231	2,994

Source: Bureau of Agricultural Economics, Department of Agriculture.

Table 70.—Average Prices of Livestock at Chicago, by Years

NOTE.—Annual averages for hogs are weighted according to monthly volume of sales; others are simple averages. For cattle the quotations represent bulk of sales of good beef steers, 1,100 pounds and up; for hogs, all grades; for sheep and lambs, all grades of native and western.

Yearly average or year (calendar)	Price, cents per pound					Index, 1913=100				
	Cattle	Calves	Hogs	Sheep	Lambs	Cattle	Calves	Hogs	Sheep	Lambs
1901–1905	5.23	5.93	5.82	(1)	5.63	63.7	58.1	69.7	(1)	73.2
1906–1910	6.07	6.90	6.86	5.06	7.05	73.9	67.6	82.2	97.5	91.7
1909–1913	7.12	8.50	7.77	4.79	7.16	86.7	83.3	93.1	92.3	93.1
1911–1915	7.90	9.45	7.60	5.13	7.57	96.2	92.6	91.0	98.8	98.4
1916–1920	12.87	14.42	14.78	10.25	15.04	156.8	141.4	177.0	197.5	195.6
1921–1925	9.23	9.50	9.04	7.02	13.53	112.4	93.1	108.3	135.3	175.9
1913	8.21	10.20	8.35	5.19	7.69	100.0	100.0	100.0	100.0	100.0
1919	15.45	16.83	17.85	10.47	16.31	188.2	165.0	213.8	201.7	212.1
1920	13.32	14.58	13.91	9.49	15.47	162.2	142.9	166.6	182.9	201.2
1921	8.16	9.36	8.51	5.13	9.86	99.4	91.8	101.9	98.8	128.2
1922	8.82	9.15	9.22	7.15	13.68	107.4	89.7	110.4	137.8	177.9
1923	9.50	9.42	7.55	7.10	13.89	115.7	92.4	90.4	136.8	180.6
1924	9.49	9.08	8.11	7.57	14.57	115.6	89.0	97.1	145.9	189.5
1925	10.19	10.47	11.81	8.16	15.66	124.1	102.6	141.4	157.2	203.6
1926	9.46	11.61	12.34	7.25	14.26	115.2	113.8	147.8	139.7	185.4
1927	12.10	12.53	9.95	7.04	14.12	147.4	122.8	119.2	135.6	183.6

[1] Not available.

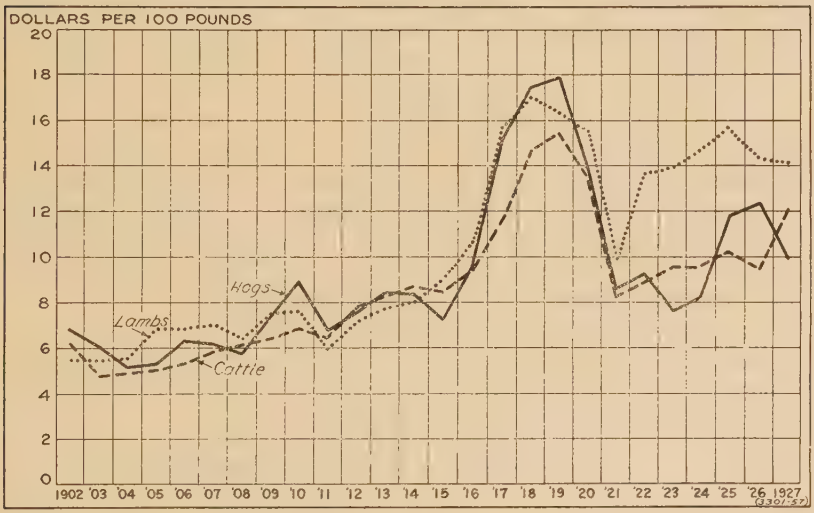
Source: Bureau of Agricultural Economics, Department of Agriculture.

PRICE MOVEMENTS AND MARKET CONDITIONS

General comparisons between the price movement of livestock on farms and at central markets and that of crops and other animal products have already been presented. (Tables 15 to 19.) More detailed analyses of the prices at Chicago, the most important market, are shown in Tables 70 and 71, while Chart XIX shows their trend.

Prices of livestock rose gradually from the low levels of the nineties until 1914. They advanced rapidly during the war years, reaching levels roughly double those of 1913. The postwar decline was greater than that in most commodities, and the average prices of cattle, hogs, and sheep in 1921 stood at about the pre-war figures. Prices of hogs, which were relatively low from 1921 to 1924 and had a substantial advance from the summer of 1924 to the summer of 1926, showed a marked decline during the following year and one-half. Cattle prices rose throughout 1927 and were higher than for any year since 1920. Prices of sheep and lambs increased from 1921 to 1925, but declined in 1926 and 1927.

Chart XIX.—PRICES OF CATTLE, HOGS, AND LAMBS AT CHICAGO



Monthly prices of hogs (Table 71) showed a general upward tendency from June, 1924, to June, 1926, when an average of 14 cents per pound was reached. Prices ranged somewhat lower during the last six months of 1926 and continued to decline until June, 1927. Quotations moved upward until October, but fell to the low point for the year in December, 8.3 cents per pound. For the year as a whole the average price of hogs was 19 per cent lower than for 1926.

Cattle prices increased more during 1927 than prices of any other class of livestock. Starting the year at 9.88 cents, there was a steady increase until November, when a peak of 14.20 cents was reached. For the year as a whole the average price was 12.10 cents, which was 28 per cent higher than the preceding year and higher than any year since 1920. Prices of lambs showed a tendency toward slightly lower levels. The high point for the year was reached in April. (Tables 70 and 71 and Charts XIX and XX.)

Table 71.—Chicago Prices of Cattle, Hogs, and Lambs, by Months

NOTE.—The basis of the quotations is the same as for Table 70. The minimum month of each year is indicated by an asterisk (*); the maximum by a dagger (†).

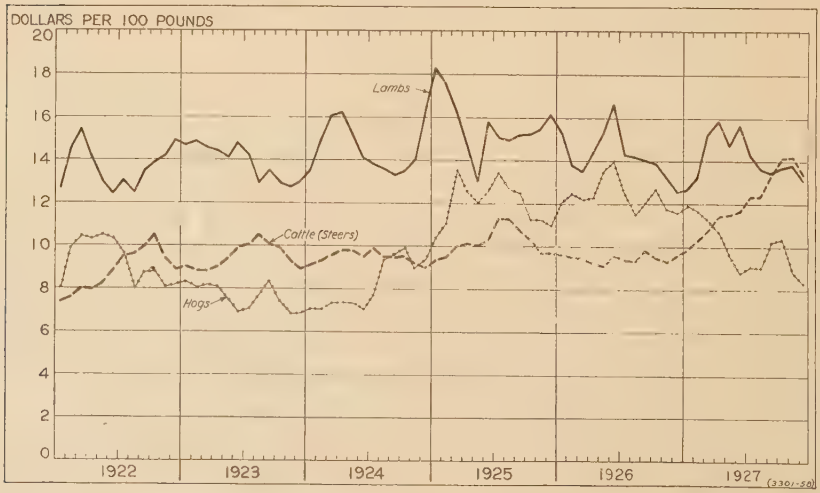
[Cents per pounds]

Month	Cattle (steers)				Hogs				Lambs			
	1924	1925	1926	1927	1924	1925	1926	1927	1924	1925	1926	1927
January	9.14	*9.28	9.59	*9.88	7.10	*10.38	12.02	†11.96	13.53	†18.28	15.28	*12.64
February	9.33	9.54	9.50	10.28	7.06	11.06	12.45	11.73	14.95	17.59	13.78	13.28
March	9.59	10.06	9.46	10.77	7.35	†13.55	12.20	11.28	16.06	16.28	13.48	15.27
April	9.83	10.12	9.22	11.42	7.36	12.55	12.33	10.69	16.22	14.85	14.38	†15.87
May	9.83	10.03	*9.12	11.49	7.34	12.06	13.55	9.59	15.23	*13.06	15.30	14.75
June	9.53	10.28	9.59	11.65	*7.04	12.57	†14.01	8.78	14.12	15.86	†16.66	15.66
July	†9.91	†11.29	9.40	12.34	7.68	13.46	12.51	9.05	13.79	15.11	14.31	14.25
August	9.54	11.26	9.33	12.33	9.38	12.66	*11.48	9.03	13.57	14.88	14.20	13.68
September	9.47	10.73	†9.85	13.34	9.57	12.52	12.03	10.22	*13.38	15.19	14.05	13.46
October	9.57	10.28	9.47	14.12	†9.91	11.31	12.72	10.39	13.52	15.20	13.88	13.70
November	9.18	9.74	9.34	†14.20	8.97	11.28	11.80	8.92	14.03	15.44	13.25	13.80
December	*8.98	9.71	9.60	13.37	9.38	10.97	11.57	*8.32	†16.47	16.15	*12.57	13.14

Source: Bureau of Agricultural Economics, Department of Agriculture.

The wide variations in grades of meat and in the prices of different cuts make impossible, in a condensed review, any close comparison between prices of live animals and those of meats at any given time. Even relative movements are not very closely comparable. The

Chart XX.—MONTHLY PRICES OF LIVESTOCK AT CHICAGO



wholesale prices of selected meat products are shown in Table 72. Beef products were substantially higher in 1927, while prices of all pork products declined.

Table 72.—Wholesale Prices of Meats and Lard, with Comparative Prices for Hogs and Cattle

[Cents per pound]

Yearly average or year	Beef, fresh		Hams, smoked, Chicago	Pork, cured, short clear sides, Chicago	Pork, fresh, loins, western New York	Lard, prime, contract, New York	Livestock	
	Carcass, good native steers, Chicago	Native sides, New York					Steers, good to choice, Chicago	Hogs, heavy, Chicago
1891–1895	[1]	7.9	10.6	7.9	[1]	7.8	4.8	5.1
1896–1900	[1]	7.8	9.2	5.9	[1]	5.4	4.9	4.0
1901–1905	[1]	8.3	11.4	9.0	[1]	8.6	5.5	5.9
1906–1910	[2] 11.0	9.1	13.2	10.6	[1]	10.3	6.1	6.9
1911–1915	12.8	12.1	15.4	11.6	[3] 15.4	10.1	8.3	7.6
1916–1920	19.8	18.6	28.6	23.5	27.8	21.9	14.2	15.1
1921–1925	16.4	14.8	24.3	15.3	22.8	13.0	9.7	9.3
1913	13.0	12.5	16.6	12.7	15.2	11.0	8.5	8.4
1921	16.3	14.8	26.8	13.5	25.9	11.1	8.8	8.5
1922	15.0	13.8	26.4	14.1	23.6	11.5	9.4	9.4
1923	15.8	14.5	21.2	12.0	19.0	12.3	10.0	7.7
1924	17.1	15.1	20.2	14.4	19.8	13.3	9.7	8.5
1925	18.0	15.9	27.1	22.3	25.8	16.8	10.7	12.3
1926	16.4	15.1	30.8	20.1	27.6	15.0	9.5	12.3
1927	18.6	17.7	24.6	18.7	24.4	12.9	12.7	10.1
Per cent change:								
1927 from 1913	+43.1	+41.6	+48.2	+47.2	+60.5	+17.3	+49.4	+20.2
1927 from 1926	+13.4	+17.2	−20.1	−7.0	−11.6	−14.0	+33.7	−17.9

[1] Not available. [2] Average for three years, 1908–1910. [3] Average for three years, 1913–1915.

Source: Bureau of Labor Statistics, Department of Labor.

EXPORTS OF MEATS AND ANIMAL FATS

Pork and hog fat have been highly important factors in our export trade at all times. Formerly beef products were important, but as population grew cost of production of beef advanced, and consequently exports dwindled. During the war, with the extraordinary demand from Europe, beef exports again attained a high figure, while pork exports also increased rapidly. Since the war there has been an almost complete cessation of the exportation of beef except that in pickled form. Pork exports have also shown a marked decline from the war peak and in 1927 were only 39 per cent of the 1921–1925 average. During 1927 meat exports were 29 per cent smaller than in 1926. Exports of beef and veal decreased about 22 per cent in both quantity and value in 1927, while pork exports were 30 per cent smaller in quantity and 39 per cent less in value than in 1926. (Table 73.)

Table 74 shows that exports of meat and animal oils and fats were both expanding rapidly until the early part of the present century. Meat exports, however, were considerably curtailed in the decade preceding the war, and the growth in exports of animal fats was much moderated. The war caused a great expansion in both the quantity and value of our exports of meat, but with the restoration

Table 73.—Exports of Principal Meats and Animal Fats [1]

[Quantity in thousands of pounds and value in thousands of dollars. Fish oils not included]

Product	Quantity						Value	
	1910–1914,[2] average	1921–1925, average	1924	1925	1926	1927	1926	1927
Beef and veal [3]	71,718	30,871	26,051	26,462	24,777	19,358	3,716	2,882
Pork, total	403,813	717,449	702,337	519,435	402,665	282,610	86,398	52,441
Bacon [4]	182,474	345,934	314,103	201,575	161,685	114,454	31,169	18,317
Hams and shoulders [5]	166,813	296,758	323,877	265,883	189,906	123,375	44,918	25,444
Fresh or frozen	2,024	38,075	32,803	19,821	15,564	8,235	3,196	1,505
Pickled	48,275	33,785	28,280	27,453	29,047	29,272	4,785	4,175
Canned	4,227	2,898	3,274	4,702	6,462	7,274	2,330	3,000
Mutton and lamb	3,539	2,835	1,445	1,464	1,171	937	267	218
Sausage, total	6,369	10,636	12,097	11,737	8,043	8,195	2,345	2,422
Oleo oil	[6] 116,225	105,534	99,380	91,972	96,902	78,781	11,785	9,599
Oleomargarine [1]	3,268	2,152	901	774	1,452	796	204	129
Tallow and oleo stock	29,009	39,326	47,759	29,702	22,787	18,524	2,390	1,941
Lard	474,355	860,839	944,095	688,829	698,961	681,303	108,600	92,035
Neutral lard	[7] 43,572	22,959	27,365	18,854	18,116	20,397	3,048	3,003
Lard compound [8]	67,319	18,683	7,382	14,091	10,581	8,988	1,485	1,084

[1] Includes oleomargarine of vegetable fats.
[2] Fiscal years.
[3] Includes fresh or frozen, pickled or cured, and canned.
[4] Includes Cumberland sides.
[5] Includes Wiltshire sides.
[6] Includes "neutral lard" for 1910.
[7] 4-year average, 1911–1914.
[8] Prior to 1922 includes "other substitutes for lard," whether vegetable or animal.
Source: Bureau of Foreign and Domestic Commerce.

of normal conditions these have again declined. A downward tendency has also been evident in our exports of animal oils and fats during recent years. (Chart XXI.) Exports of meats aggregated 311,100,000 pounds in 1927, which was 29 per cent less than in 1926 and a little less than one-third the quantity exported in 1923. Pork, which makes up the bulk of the exports of meats, goes chiefly to northwestern Europe, the United Kingdom being far the largest market. Since the peak year of 1923 our exports of pork have shown a steady downward movement as a result of the increased level of prices in the home markets and the increased production abroad. (Table 75.)

Exports of animal fats were not stimulated by the war, but fell off owing to the closing of the important German market. However, exports of lard, the principal item, have averaged during postwar years much above pre-war figures, but, as in the case of pork meats, declined sharply from 1923 to 1925, increased slightly in 1926, and decreased again in 1927. Exports of all other animal fats were much smaller in 1927 than before the war.

Exports of each of the animal fats, except neutral lard, in 1927 showed a slight decrease compared with 1926 and were far smaller than in the peak year 1923. The United Kingdom and Germany are the largest consumers of American lard. As compared with previous years, Italy has practically ceased purchasing American animal fats and oils.

Chart XXI.—EXPORTS OF MEATS AND ANIMAL FATS

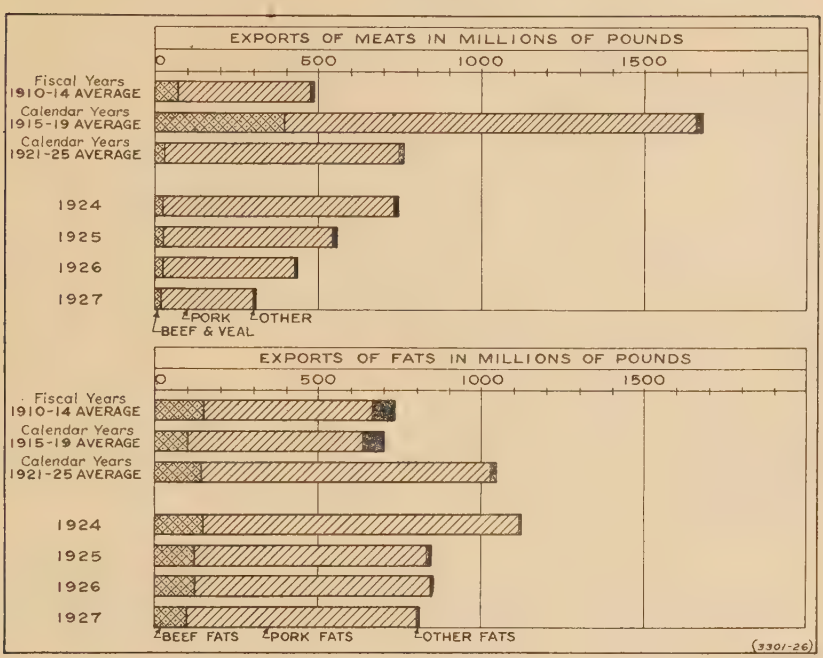


Table 74.—Exports of Meat and Animal Fat [1]

[Quantity in thousands of pounds and value in thousands of dollars. Fish oils not included]

Yearly average or year [2]	Values, all classes combined			Yearly average or year [2]	Quantity and value of meats and fats shown in Table 73			
					Meat		Fat and oil [1]	
	Total	Meat	Fat, grease, and oil [1]		Quantity	Value	Quantity	Value
1871–1875	59,628	33,909	25,773	1910–1914	485,439	59,074	725,033	76,674
1876–1880	101,994	66,498	35,496	1921–1925	761,792	124,275	1,046,892	137,721
1881–1885	106,438	68,946	37,492					
1886–1890	94,260	59,092	35,168	1910	478,650	54,264	596,375	66,624
1891–1895	132,119	80,986	51,133	1911	465,976	57,564	760,034	79,715
1896–1900	152,411	99,041	53,370	1912	553,389	63,345	826,643	80,124
1901–1905	179,574	108,641	70,933	1913	474,231	59,791	757,664	82,321
1906–1910	177,294	89,968	87,326	1914	454,952	60,407	684,448	74,584
1911–1915	160,453	76,647	83,806	1915	893,069	121,197	677,508	72,853
1916–1920	564,189	397,321	166,868	1916	1,287,305	188,910	609,285	79,545
1921–1925	279,752	133,224	146,528	1917	1,286,118	259,475	475,877	94,635
				1918	2,409,587	648,217	681,341	175,443
1919	1,017,187	690,897	326,290	1919	2,149,972	661,744	1,046,300	312,288
1920	464,996	273,409	191,587	1920	1,061,168	254,002	779,157	180,499
1921	296,833	150,878	145,955	1921	795,188	139,732	1,086,204	137,827
1922	253,008	134,528	118,480	1922	743,536	125,650	962,270	111,569
1923	308,023	149,367	158,656	1923	969,207	139,689	1,214,883	150,784
1924	272,584	113,446	159,138	1924	741,929	105,728	1,126,882	149,645
1925	268,312	117,899	150,413	1925	559,098	110,577	844,222	138,779
1926	234,963	98,733	136,230	1926	436,656	92,726	848,800	127,512
1927	181,028	64,185	116,843	1927	311,100	57,962	808,788	107,792

[1] Includes oleomargarine of vegetable fats.
[2] Fiscal years through 1915; calendar years thereafter.
Source: Bureau of Foreign and Domestic Commerce.

Table 75.—Exports of Principal Meats and Fats, by Country of Destination

[In thousands of pounds]

Principal country of destination	Beef and veal, pickled or cured		Hams and shoulders, cured			Bacon [2]			Pickled pork	
	1926	1927	1925	1926	1927	1925	1926	1927	1926	1927
Total	19,653	14,868	265,883	189,906	123,266	201,575	161,685	114,454	29,047	29,272
Belgium	372	111	8,457	1,558	514	5,253	3,796	2,602	158	87
Finland		5	15	72	165	1,829	5,380	4,589	75	
Germany	354	435	311	143	134	14,779	9,982	8,820	253	219
Italy			180	27	28	6,901	757	2,679		139
Netherlands	60	56	1,033	441	188	4,976	4,251	978	68	49
Norway	1,086	720	1,509	847	253	8,589	4,747	1,737	1,044	333
Sweden	192	148	191	325	92	6,548	6,274	4,752	68	24
United Kingdom	1,023	596	224,326	166,019	102,410	118,767	94,881	50,836	3,360	4,301
Canada	619	454	7,526	6,443	5,240	3,700	4,843	4,431	7,150	6,459
Panama	203	219	811	823	773	218	214	262	303	354
Mexico	7	4	1,038	837	720	407	334	248	6	2
Newfoundland and Labrador	7,343	4,691	643	655	464	711	677	1,003	3,632	3,375
British West Indies and Bermudas	3,861	2,875	1,110	978	1,212	427	487	332	2,358	2,899
Cuba	102	113	14,539	7,281	7,429	22,704	20,631	21,247	7,627	7,775
Dominican Republic	36	34	425	291	340	53	101	53	159	283
Haiti	412	323	152	116	102	19	5	9	939	973
British Guiana	739	324	145	131	156	[3]	7	[3]	615	643
British Africa	838	1,163	29	10	20	11	17	29	11	

Principal country of destination	Oleo oils		Lard			Neutral lard			Lard compounds [4]	
	1926	1927	1925	1926	1927	1925	1926	1927	1926	1927
Total	96,902	78,781	688,829	898,961	681,303	18,854	18,116	20,397	10,581	8,988
Belgium	2,236	1,415	16,680	11,796	12,716	548	524	749	134	44
Denmark	3,574	2,223	4,013	3,678	2,744	1,042	663	848		
Finland	124	513	3,071	4,431	3,685	73	19	17		
Germany	28,262	21,291	193,004	199,534	184,738	4,702	4,791	6,150	340	9
Greece	4,313	2,383	20		33				19	
Italy	618	513	28,507	5,901	12,190	78	27	19		
Netherlands	27,434	24,538	36,944	48,365	37,764	4,452	4,616	4,788	544	253
Norway	5,904	4,216	747	856	676	1,368	1,099	1,122	355	372
Poland and Danzig	31	40	7,077	6,446	14,359					
Sweden	1,044	607	2,468	1,901	1,046	1,010	1,006	654	5	8
United Kingdom	18,625	16,457	214,772	224,928	220,743	3,721	3,423	3,966	757	1,360
Canada	236	264	10,595	12,583	15,389	119	105	175	99	122
Mexico	114	207	46,529	45,379	43,817	42	42	193	870	564
Newfoundland and Labrador	1,849	1,499	85	124	123	814	919	1,014	141	57
British West Indies and Bermudas	4	5	354	273	377	4	[3]	1	280	361
Cuba	1,142	1,285	76,973	79,654	80,120	492	516	334	4,582	3,287
Haiti			1,958	2,490	3,011	4		1	556	511
Colombia	[3]	8	5,255	14,545	10,115	8		6	19	9
Peru	12	11	10,177	11,373	7,249			10	56	31

[1] Includes Wiltshire sides.
[2] Includes Cumberland sides.
[3] Less than 500 pounds.
[4] Only those containing animal fats.

Source: Bureau of Foreign and Domestic Commerce.

DAIRY AND POULTRY PRODUCTS

PRODUCTION

The number of dairy cows at the beginning of 1927 was 21,818,000, which was 370,000 less than the previous year and the lowest number since the beginning of 1922. Nevertheless, milk production in 1927 was somewhat above that in 1926. Butter production equaled that of 1926, and production of condensed and evaporated milk increased, being the largest since 1919. Cheese production in factories, on the other hand, was the lowest since 1921. Cold-storage holdings of butter averaged higher in 1927 than in the two previous years, but cold-storage holdings of cheese averaged lower than the 1926 holdings.

Table 76.—Production of Butter, Cheese, and Condensed Milk

[In millions of pounds]

Year	Butter			Cheese			Condensed and evaporated milk
	Total	Produced on farms	Produced in factories	Total	Produced on farms	Produced in factories [1]	
CENSUS RETURNS							
1879	806	777	29	243	27	216	13
1889	1,205	1,024	181	257	19	238	38
1899	1,493	1,072	421	299	16	283	187
1909	1,622	995	627	320	9	311	495
1919	1,647	708	939	481	6	475	2,154
1921	(2)	(2)	1,132	(2)	(2)	424	1,766
1923	(2)	(2)	1,320	(2)	(2)	567	1,835
1925	2,099	643	1,456	(2)	(2)	558	1,814
DEPARTMENT OF AGRICULTURE ESTIMATES							
1920	1,539	675	864	398	6	392	1,578
1921	1,705	650	1,055	389	6	383	1,464
1922	1,779	625	1,154	407	5	402	1,431
1923	1,862	610	1,252	434	4	430	1,775
1924	1,956	600	1,356	473	5	468	1,701
1925	1,952	590	1,362	444	5	503	1,758
1926	2,067	615	1,452	(2)	(2)	495	1,734
1927	2,067	600	1,467	(2)	(2)	401	1,922

[1] Includes cottage, pot, and bakers' cheese; census figure for this cheese in 1925 is 50,161,000 pounds, while the Department of Agriculture's estimates are: 1925, 59,485,000 pounds, and 1926, 67,977,000 pounds.
[2] Data not available.

Sources: Bureau of the Census, Department of Commerce; Bureau of Agricultural Economics, Department of Agriculture.

Egg production averages around 2,000,000,000 dozen a year. There were larger receipts in the principal markets during 1927 and large cold storage holdings of both eggs and egg products. Receipts of eggs at the five principal markets were the largest since 1924, and were heaviest in April and May, when spring production was at its peak. Cold-storage holdings averaged 5,410,000 cases of 30 dozen each during 1927, the highest stocks on record. In addition to the storage of eggs in the shell, frozen egg products—whole eggs, egg yolk, and albumen—in cold storage averaged 57,447,000 pounds monthly, also a high record; the production of these products has had a rapid and constant growth, and trade estimates place the yearly output now at over 100,000,000 pounds, requiring over, 1,000,000,000 eggs. Cold-storage holdings of egg products increased from 26,053,000 pounds in February to 81,418,000 pounds in July, and then dropped to 47,005,000 pounds in December.

It is estimated that poultry production was less during 1927 than in 1926, which is partly borne out by receipts of dressed poultry at the five principal markets, which averaged 28,684,000 pounds monthly, or 1,494,000 pounds a month less than in 1926. The monthly cold-storage holdings of dressed poultry averaged 78,949,000 pounds, which was somewhat larger than the average for 1926. Cold-storage holdings in 1927 were largest at the end of January, 144,076,000 pounds, and lowest in August, 39,711,000 pounds.

Table 77.—Number and Quantity and Price of Chickens and Eggs Produced

Year	Number of chickens	Price per fowl	Number of eggs	Price per dozen
	Thousands	*Cents*	*1,000 dozen*	*Cents*
1919	473,201	81.60	1,654,045	40.88
1920	474,700	86.95	1,647,043	44.03
1921	549,700	71.37	1,888,318	29.26
1922	579,000	65.36	1,970,755	25.86
1923	648,900	74.27	2,176,558	27.27
1924	545,848	76.83	1,913,245	29.89

Sources: Statistics for 1919 and 1924, Bureau of the Census, Department of Commerce; other years, Bureau of Agricultural Economics, Department of Agriculture.

PRICES

The wholesale price of 92-score creamery butter averaged 47 cents a pound at the five principal markets in 1927, which was the highest since 1920. Prices throughout the year vary inversely with production. The highest monthly average price was 50.7 cents a pound, which was reached in February and December, and the lowest, 41.6 cents a pound in July. New York prices were far enough above the London prices during most of the year to attract considerable shipments of foreign butter.

The lower production of cheese in 1927 was reflected in the price, which averaged for the year the highest since 1920 and was 3 cents a pound higher than in 1926. Prices varied from 19.1 cents in March to 27.4 cents in December. (Table 78.)

Table 78.—Average Wholesale Price of Butter and Cheese at Five Markets

NOTE.—The markets covered are New York, Chicago, Boston, San Francisco, and Philadelphia. The averages are without any weighting for relative importance; weighting, however, would change them only slightly. Quotations are for 92-score creamery butter and No. 1 Fresh American cheese.

[Cents per pound]

Year	Butter		Cheese		Month	Butter (five markets)					Cheese (five markets)				
	Five markets	New York	Five markets	New York		1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
1910	[1]	30	[1]	16	January	50.6	51.9	41.4	44.7	48.9	25.6	22.5	22.8	24.5	25.8
1913	[1]	32	[1]	15	February	49.2	49.9	41.2	44.9	50.7	24.9	22.1	22.9	24.3	24.7
1917	[1]	43	[1]	24	March	48.5	46.2	46.7	40.8	49.4	24.1	21.0	22.6	22.2	19.1
1918	[1]	51	[1]	27	April	44.5	38.4	43.7	39.2	48.6	21.6	18.2	22.4	20.0	23.8
1919	59	61	31	32	May	41.7	38.3	42.0	40.4	42.8	22.3	18.4	21.4	19.9	23.1
1920	59	61	28	29	June	40.3	40.1	42.9	40.9	42.1	23.8	19.5	22.6	20.9	23.0
1921	43	43	22	21	July	39.7	39.6	43.4	40.3	41.6	23.4	19.6	23.0	21.2	23.1
1922	40	41	21	[2] 20	August	44.1	38.5	44.8	42.2	42.5	24.4	19.7	24.1	21.8	24.3
1923	46	47	24	[3] 25	September	46.4	34.2	48.8	44.6	46.4	25.6	20.3	24.1	23.1	25.7
1924	42	43	20	21	October	47.9	38.5	55.4	46.2	48.1	25.6	19.7	25.2	24.6	26.9
1925	46	45	23	24	November	51.1	41.8	51.1	49.3	49.1	24.8	20.2	25.4	24.5	26.7
1926	44	44	23	[4] 23	December	53.0	44.0	48.9	52.8	50.7	23.0	22.1	24.6	24.9	27.4
1927	47	47	25	26											

[1] Not available.
[2] Average for 9 months, January to September.
[3] Average for 11 months, January to November.
[4] Average for 10 months, February to November.

Source: Bureau of Agricultural Economics, Department of Agriculture.

Table 79.—Farm Prices of Chickens and Eggs

NOTE.—Farm prices represent weighted averages for the entire country; the annual averages represent production years ending June 15 for chickens and March 15 for eggs, and are weighted according to volume marketed each month.

[Chickens, cents per pound; eggs, cents per dozen]

Yearly average or year ending June and Mar. 15—	Chickens	Eggs	Month	Chickens	Eggs
1911–1915	11.2	19.1	1926		
1916–1921	19.2	31.9	March	21.9	24.1
1922–1925	18.8	25.3	June	23.9	25.7
			September	21.4	31.5
1920	24.2	41.8	December	19.8	47.6
1921	22.8	39.3			
1922	19.3	25.3	1927		
1923	18.2	24.7	March	21.3	20.8
1924	18.3	25.2	June	20.2	17.8
1925	19.2	26.1	September	19.4	29.4
1926	20.7	28.3	December	19.2	43.3
1927	20.7	27.5			

Source: Bureau of Agricultural Economics, Department of Agriculture.

Table 80.—Market Prices of Eggs

NOTE.—Annual averages represent calendar years and are unweighted, thus giving undue influence to the small sales at high prices during the winter. The grades of eggs are as follows: Western firsts, Boston; fresh firsts, New York and Chicago; Western extra firsts, Philadelphia; and fresh extras, San Francisco.

[Cents per dozen]

Yearly average or year (calendar)	Boston	New York	Philadelphia	Chicago	San Francisco	Month	Boston	New York	Philadelphia	Chicago	San Francisco
1910–1914	25	25	26	22	32	1926					
1915–1920	42	43	44	38	47	March	29	29	30	27	26
1921–1925	37	37	40	34	38	June	30	30	34	28	31
						September	37	38	42	36	44
1920	57	57	59	52	61	December	50	48	52	44	44
1921	41	41	43	36	45						
1922	35	35	37	30	39	1927					
1923	35	35	38	31	33	March	26	25	27	24	23
1924	36	36	40	34	34	June	23	23	25	22	24
1925	40	40	43	37	38	September	34	34	40	33	39
1926	36	36	39	34	36	December	44	45	50	43	38
1927	32	32	36	30	32						

Source: Bureau of Agricultural Economics, Department of Agriculture.

Prices of condensed milk in 1927 averaged about the same as in 1926 and were lower than in any other year since 1922. Average monthly prices in 1927 ranged from $5.63 a case in January to $6.02 in November. Evaporated milk prices, on the other hand, were above those for the three previous years.

The monthly farm price of eggs averaged lower in 1927 than 1926. Peak prices are reached normally during the winter months, when production is lowest. Prices varied during 1927 from 17.8 cents in June to 43.3 cents in December. Prices of eggs in central markets were also lower in 1927 than 1926. (Tables 79 and 80.)

Poultry prices in 1927 were below those of 1926. Average prices paid producers for live poultry were about 2 cents a pound less in 1927 than in 1926, prices for live poultry ranging from 21.8 cents a pound in April to 19.2 cents in December, 1927, as compared with 23.9 cents in June and 19.8 cents in December, 1926.

FOREIGN TRADE

Dairy Products.

The export trade of the United States in dairy products has declined since 1925, and in 1927 the total value was $17,422,000, or 8 per cent less than in 1926 and 26 per cent less than in 1925. Condensed, evaporated, and powdered milk represented in 1927 about 75 per cent of our export trade in dairy products. In addition to shipments to foreign countries, dairy products to the value of $4,269,000 were shipped to our noncontiguous territories. On the other hand, imports of dairy products increased 8 per cent and in 1927 had a value of $36,964,000. Imports of fresh milk and cream, practically all of which come from Canada, had a value in 1927 of $8,385,000. The year 1927 was favorable in the principal butter producing countries, resulting in larger supplies, generally lower prices, and keener competition, conditions partly responsible for the smaller exports and larger imports of the United States. The quantity of butter imported into the United States during 1927 was 95 per cent more than the amount exported, but the value was only 43 per cent more owing to the lower price of foreign butter. Exports of cheese have decreased from over 9,000,000 pounds in 1925 to 3,400,000 pounds in 1927, while imports of cheese reached 79,796,000 pounds. (Table 81.) This condition was brought about partly by lower production in the United States and partly by larger production in the countries which manufacture types of cheese which are not made in the United States on a scale sufficiently large to meet domestic demands. The main sources of cheese imported into the United States in 1927 were Italy, Switzerland, Canada, France, the Netherlands, and Greece.

Poultry Products.

The balance of the foreign trade of the United States in poultry products in 1927 showed an excess of exports. Exports had a value of $8,219,000 while imports, made up of live and dressed poultry, and eggs and egg products, had a value of $6,935,000. Live poultry comes largely from Canada, while exports go to Great Britain, Canada, and the Latin-American countries.

Eggs in the shell constitute the bulk of the poultry products exported, while egg products form the bulk of the imports. Exports of eggs in 1927 amounted to 28,707,000 dozen and were 7.8 per cent greater than in 1926. Cuba, our largest market, took 41 per cent of the total exports, but showed a decline of 2 per cent as compared with 1926, while exports to Argentina, our second market, were 28 per cent more than in 1926. Imports of eggs in the shell are negligible, but egg products to the value of $5,100,000 were imported in 1927, coming mainly from China. This was 29 per cent less than in 1926, the decrease being caused by general conditions in China during 1927.

Table 81.—Imports and Exports of Dairy Products and Eggs

NOTE.—Quantities in thousands of pounds; sweet or sour milk and cream in thousands of gallons; eggs in the shell, thousands of dozens; values in thousands of dollars. In addition to articles listed there are small exports of fresh milk and cream, and of preserved eggs.

Item	Quantity							Value		
	1910–1914,[1] average	1921–1925, average	1923	1924	1925	1926	1927	1925	1926	1927
DOMESTIC EXPORTS										
Butter	4,278	7,698	5,846	8,257	5,343	5,483	4,343	2,411	2,529	2,010
Cheese	4,916	7,720	8,331	4,299	9,190	3,903	3,410	2,420	1,115	1,028
Condensed milk (sweetened)	15,774	62,962	57,378	64,025	42,707	38,711	34,981	6,606	6,020	5,517
Evaporated milk (unsweetened)		142,143	136,886	142,254	105,056	75,838	68,047	10,615	7,832	7,182
Powdered milk		5,450	2,437	5,529	3,649	2,661	3,326	717	774	940
Eggs in shell	13,170	30,337	30,659	28,117	24,999	26,634	28,707	7,534	7,682	7,738
IMPORTS										
Butter [2]	2,480	15,175	23,741	19,405	7,212	8,029	8,460	2,646	2,799	2,872
Cheese [2]	49,220	51,888	64,420	59,176	62,403	78,417	79,796	17,349	21,084	24,500
Milk and cream, sweet or sour	-------	7,660	7,558	9,390	12,594	12,786	9,436	8,834	9,303	8,385
Milk, condensed, evaporated, powdered, malted, etc	([3])	9,049	10,398	8,489	12,394	9,376	10,356	1,281	1,059	1,207
Eggs and yolks, preserved	999	18,764	16,253	15,958	25,470	18,627	10,041	4,944	4,224	3,051
Eggs, albumen, dried, etc	-------	6,107	7,046	3,764	8,517	7,110	5,301	3,881	2,961	2,049
Eggs in shell	2,149	1,097	412	383	609	298	250	163	104	75

[1] Fiscal years.
[2] Substitutes for butter and cheese included prior to 1924.
[3] No data.

Source: Bureau of Foreign and Domestic Commerce.

CANNED AND DRIED FRUITS AND VEGETABLES

PRODUCTION AND MARKETING CONDITIONS

The most recent statistics of production for canned and dried fruits and vegetables are those published by the Bureau of the Census for the year 1925. In other parts of the foodstuffs section of the Yearbook statistics of canned meats, milk, and fish are given. Table 82 gives a comparison of the development of the canning and preserving industry for a period of over 35 years. The total value of canned and dried fruits and canned vegetables produced amounted to $616,000,000 in 1925, which was 11 times as great as in 1899. The development of a number of individual lines of canning since 1914 (Table 83) shows that, with but few exceptions, there have been continual increases in both the quantity and value of products. The fruit-canning industry has shown a particularly large increase during the past decade; the output in 1925 was over two and one-half times as great as in 1914. Similarly the dried-fruit industries in 1925 had an output almost double that of 1914.

Canned Fruits and Vegetables.

Figures collected by the National Canners' Association which appear in Table 84 show the output of the three staple vegetables. Production of canned corn and canned tomatoes reached a peak in 1925, while the pack of peas in 1924 was the largest on record. Very large packs of corn for two years and of peas for three years caused

a considerable carry-over into 1927, and consequently acreage was reduced. This, aided by a poor growing season, resulted in smaller packs for 1927, which was very helpful to the canning industry. Tomato production was larger than was generally anticipated, but still was under the average of the five years preceding. The pack of the less important vegetables has been increasing slowly and apparently is being consumed at such rates as to avoid the accumulation of excessive stocks.

Table 82.—Canning and Preserving Industry (Census Statistics)

[Values in thousands of dollars]

Year	Total industry					Value of products				
	Establishments	Wage earners (average number) [1]	Cost of materials	Value of products	Value added by manufacture	Fruits and vegetables	Pickles, jellies, preserves, and sauces	Fish, crabs, and shrimps	Oysters and clams
1889	1,328	61,812	30,794	49,886	19,092	29,862	9,791	6,972	3,261
1899	2,570	57,012	63,668	99,335	35,667	56,427	23,477	18,178	1,253
1909	3,767	59,968	101,823	157,101	55,278	91,439	37,334	25,514	2,814
1914	4,220	74,071	159,658	243,440	83,782	149,176	60,915	31,111	2,238
1919	4,280	89,923	412,660	628,288	215,628	402,243	145,785	77,284	2,976
1921 [2]	2,225	59,675	259,704	401,831	142,127	248,106	117,611	33,957	2,158
1923 [2]	2,799	81,678	330,021	565,905	235,884	370,398	144,918	47,625	2,964
1925 [2]	2,722	96,396	424,767	677,131	252,364	616,071	[3]	61,061	[4]

[1] Obtained by adding monthly figures and dividing by 12; as the industry is highly seasonal the number employed at certain times is far greater.
[2] Excludes data for establishments reporting products under $5,000 value.
[3] Included in "Fruits and vegetables."
[4] Included in "Fish, crabs, and shrimps."
Source: Bureau of the Census.

Table 83.—Production of Canned Vegetables and Canned and Dried Fruits

NOTE.—Quantity of canned vegetables and soups and canned fruits in cases, and dried fruits in pounds.

Item	Number in case and standard size of can	Quantity (thousands)					Value (thousands of dollars)				
		1914	1919	1921	1923	1925	1914	1919	1921	1923	1925
Canned vegetables and soups							92,291	176,431	118,188	214,715	282,891
Beans	24 No. 2	8,994	14,824	11,316	20,468	24,441	16,565	39,409	30,712	39,638	55,165
Corn	do	9,920	14,403	9,011	14,704	22,837	13,923	35,532	19,550	30,833	51,346
Peas	do	8,826	9,326	8,222	14,434	16,796	15,089	25,073	22,953	39,768	42,887
Tomatoes	24 No. 3	16,200	11,836	4,134	14,781	15,303	25,532	38,068	12,509	39,677	42,680
Asparagus	24 No. 2½	638	1,007	740	1,462	1,476	2,791	6,572	5,137	10,955	10,487
Canned soup	48 No. 1	4,886	5,845	6,862	14,186	20,171	7,877	11,858	13,584	27,135	80,326
Other	24 No.[1]	5,681	6,712	4,761	9,902		10,514	19,919	13,743	26,709	
Canned fruits							24,897	127,949	56,568	80,224	102,638
Peaches	24 No. 2½	3,408	7,707	5,417	7,039	9,899	9,586	46,516	23,865	26,262	38,562
Apples	24 No. 3	1,515	2,448	2,239	2,726	2,604	2,392	9,082	7,748	6,540	6,951
Pears	24 No. 2½	1,063	2,022	1,165	1,818	3,593	3,854	14,203	7,539	9,390	20,898
Apricots	do	1,052	3,940	1,057	1,562	1,941	3,061	25,168	4,314	5,464	7,668
Other	24 No. 2	2,411	5,315	2,638	7,184	7,339	6,004	32,980	13,102	32,568	10,522
Dried fruits		568,587	615,409	504,904	791,801	1,054,128	34,772	85,401	71,173	74,385	72,119
Raisins		226,044	293,301	275,282	380,068	533,722	13,939	35,544	47,562	36,207	28,788
Prunes [2]		(2)	(2)	(2)	245,786	397,583	(2)	(2)	(2)	22,352	28,971
Peaches		61,907	73,379	35,407	61,616	36,857	2,916	12,110	4,166	6,469	3,555
Apples		54,957	46,623	22,975	19,398	21,121	2,889	6,772	2,800	1,693	2,227
Apricots [2]		(2)	(2)	(2)	54,029	33,039	(2)	(2)	(2)	5,192	5,434
Other		225,679	202,105	171,240	30,903	31,805	15,028	30,975	16,645	2,472	3,144

[1] In 1925 "other" consists of the following standard size cans: 75 per cent were in No. 3 cans; 17 per cent n No. 2½ cans; and 10 per cent in No. 2 cans.
[2] Not comparable with figures for 1923 on account of enlargement of scope of canvass; included in "other."
Source: Bureau of the Census.

Table 84.—Output of Canned Corn, Peas, and Tomatoes

[In thousands of cases of 24 cans; corn and peas, No. 2 cans; tomatoes, No. 3 cans]

Year	Corn	Peas	Tomatoes	Year	Corn	Peas	Tomatoes
1909	5,787	5,028	10,984	1919	13,550	8,685	10,810
1910	10,063	4,347	9,235	1920	15,040	12,317	11,368
1911	14,337	4,532	9,749	1921	8,843	8,207	4,017
1912	13,109	7,307	14,022	1922	11,419	13,042	11,538
1913	7,283	8,770	14,206	1923	14,106	13,948	14,672
1914	9,789	9,347	15,222	1924	12,131	19,315	12,519
1915	10,124	9,272	8,469	1925	24,320	17,816	19,770
1916	9,130	6,686	13,142	1926	19,069	17,709	9,455
1917	10,803	9,829	15,076	1927	10,347	12,936	13,137
1918	11,722	11,063	15,882				

Source: National Canners' Association.

The State of California is by far the most important producer of both canned and dried fruits and is a considerable factor in the production of certain canned vegetables. Figures collected by the Canners' League of California (Table 85) show the production of certain canned fruits and vegetables over a period of years. After the extraordinarily large pack of 1926 a reduction would naturally be expected in 1927, and this occurred. For most of the items, however, the amounts, although smaller than those of 1926, still show a satisfactory increase when compared with 1925 and previous years. Climatic conditions in the Pacific Northwest reduced the pack of fruits and vegetables in that section, according to trade statements. The barrel pack of berries was also much smaller than usual. Prices are holding up well and it is reported that stocks have been reduced.

Table 85.—California Packs of Fruits and Vegetables

[In thousands of cases—all grades and sizes]

Product	1911–1915, average	1920	1921	1922	1923	1924	1925	1926	1927
Total fruits and vegetables	8,393	16,632	11,128	22,391	19,152	17,502	24,160	30,522	25,505
Fruits	5,560	11,383	8,512	15,478	11,352	10,363	15,632	20,975	16,775
Peaches	2,977	6,753	5,796	9,160	7,464	6,330	10,457	14,472	11,150
Apricots	1,066	2,312	1,151	3,570	1,562	2,050	2,197	3,390	3,117
Pears	767	1,134	872	1,713	1,182	1,445	2,316	2,044	1,930
Other	750	1,128	693	1,035	1,144	538	662	1,069	578
Vegetables	2,833	5,250	2,616	6,913	8,801	7,139	8,528	9,547	8,729
Tomatoes	1,665	1,859	357	1,925	2,925	2,155	2,259	3,191	2,914
Tomato products	----	833	495	1,499	1,283	1,292	1,790	2,126	1,097
Asparagus	745	1,025	887	1,240	1,520	1,793	1,745	2,236	2,190
Spinach	----	685	434	1,181	1,384	1,073	1,806	1,339	1,969
Other	423	848	443	1,068	1,689	826	928	655	559

Source: Canners League of California.

The effect of the adverse conditions in 1926 and unfavorable conditions during part of 1927, resulted in a slight decrease in the 1927 pack of Hawaiian pineapple as compared with that of the previous year. Conditions in Hawaii for the production of pineapples are beyond question better than those of any other section of the world,

and this has resulted in the growth of the pineapple pack from a little over 2,250,000 cases in 1914 to 8,800,000 cases in both 1926 and 1927. The other regions of the world where pineapples are grown and canned only produce approximately one-eighth as much as Hawaii.

Prices of Canned Goods.

The exceptionally large packs of staple canned vegetables have caused decreases in prices for about two years, as considerable stocks were accumulated. The low prices to consumers, especially in the latter part of 1927, created a large demand for canned goods, reduced the stocks, and at the end of the year the situation appeared quite favorable. On account of the exceptionally heavy pack of canned fruits in 1926 and the resultant carry-over, opening prices for 1927 were somewhat lower than those of 1926. Improvement of foreign demand, particularly in the United Kingdom, and a larger domestic demand have resulted in an improvement in conditions over those at the beginning of 1927.

Dried Fruits.

Conditions in the dried-fruit trade have improved to a large extent. Exports were about one-third larger than in 1926, but the values did not increase at the same rate. The lower values were, in a large measure, responsible for the increased export movement, although the intensive selling efforts of American firms were also contributory. Exports of raisins in 1927 were the largest on record, and only once have prune exports been any larger. The foreign markets for dried fruit are comparatively limited in number, 10 countries taking over 90 per cent of the total, and two of these countries account for almost one-half of the exports. It is interesting to note that in the last few years about two-thirds of the exports have moved directly from Pacific coast ports instead of being trans-shipped through Atlantic ports.

FOREIGN TRADE

The exports of canned fruits for the average of the two census years 1923 and 1925 represented about 23 per cent of the domestic production, while the exports of dried fruits represented about 28 per cent of the production.

Of the canned vegetables and dried and canned fruits exported in 1927 increases in quantity were recorded in every instance except for canned beans, tomatoes, and dried apples. In the case of raisins and prunes the actual increases were quite large and the exports of raisins were greater than in any former year. Values for all commodities except dried peaches were above those of the previous year and in several cases were the highest on record. Although the quantity of canned fruits exported was the second largest amount since the war, the reduction in prices lowered the total value below those of the three years preceding. (Table 86.)

Table 86.—Quantity and Value of Exports of Canned Vegetables and Fruits and Dried Fruits

Article	Quantity (thousands of pounds)					Value (thousands of dollars)					
	1923	1924	1925	1926	1927	1910–1914 [1]	1923	1924	1925	1926	1927
Total	400,462	686,084	662,103	670,883	827,157	20,463	40,888	60,400	63,691	62,250	66,429
Canned vegetables	47,523	49,985	55,361	71,347	80,846	1,401	5,175	5,620	5,918	6,749	7,487
Pickles and sauces	12,709	10,821	10,118	10,346	14,217	[2] 883	1,762	1,586	1,683	1,745	2,055
Canned fruits	147,576	224,313	263,360	223,749	247,836	3,964	15,076	22,653	26,829	22,684	22,627
Preserved fruits, jellies, and jams	1,997	2,015	1,556	1,884	2,471	185	430	377	333	396	423
Dried and evaporated fruits	190,657	398,950	331,708	363,557	481,787	14,030	18,445	30,164	28,928	30,676	33,837
Raisins	77,814	92,140	125,924	141,038	177,435	1,070	7,627	7,027	9,291	11,178	12,302
Apples	16,708	29,740	22,721	28,327	27,695	2,815	1,547	3,639	2,788	2,974	2,999
Apricots	20,169	30,456	20,161	15,955	20,980	2,128	2,383	3,845	3,512	3,334	3,549
Peaches	4,656	12,552	4,412	5,335	6,517	394	432	987	508	775	671
Prunes	59,104	220,912	146,485	158,076	229,590	4,715	5,211	13,218	11,266	10,635	12,614
Other	12,206	13,150	12,006	14,826	19,571	2,908	1,244	1,448	1,563	1,780	1,701

[1] 1910–1914, years ending June 30; other years, calendar.
[2] 2-year average, 1913 and 1914.
Source: Bureau of Foreign and Domestic Commerce.

The foreign distribution of the most important of the canned and dried fruits and vegetables is shown in Table 87. For all canned and dried products, except dried apricots and prunes, the United Kingdom is the most important market. For dried fruits the most important markets outside of the United Kingdom are in continental Europe, particularly the central and northern sections. Germany and France are important purchasers of canned products, with Canada and Cuba also taking large quantities. Considerable differences appear in the grade of dried fruits shipped to different countries, as indicated by the differences in the relations of quantity to value of exports.

Table 87.—Exports of Canned and Dried Fruits, by Principal Countries of Destination

[Quantity in thousands of pounds, value in thousands of dollars]

Article and country	Quantity		Value	
	1926	1927	1926	1927
Canned fruits:				
France	5,626	4,394	564	446
Germany	6,244	15,481	616	1,427
Netherlands	2,907	4,768	279	428
Sweden	2,305	2,700	235	224
United Kingdom	166,540	176,452	16,547	15,583
Canada	13,157	15,495	1,383	1,516
Cuba	3,801	4,344	438	445
Raisins:				
Belgium	3,374	5,208	269	365
Denmark	1,502	2,112	120	136
Germany	15,888	17,415	1,381	1,218
Netherlands	14,171	14,241	1,124	985
United Kingdom	44,923	67,978	3,595	4,744
Canada	36,808	36,146	2,612	2,313
Mexico	1,655	1,456	164	123
China [1]	4,764	4,118	371	301
Japan	2,972	2,837	243	206
New Zealand	5,513	5,552	446	411

Article and country	Quantity		Value	
	1926	1927	1926	1927
Dried apricots:				
Denmark	2,008	2,068	429	386
Germany	3,964	5,915	834	1,009
Netherlands	2,770	4,043	580	679
United Kingdom	1,677	2,321	367	470
Canada	1,097	1,133	172	143
Prunes:				
Belgium	5,649	8,049	408	440
Denmark	6,826	8,075	434	457
France	22,915	26,444	1,494	1,471
Germany	28,888	70,009	1,545	3,065
Netherlands	7,575	19,280	480	1,038
Sweden	5,994	6,861	486	436
United Kingdom	41,471	40,907	3,121	2,618
Canada	20,274	20,340	1,294	1,168

[1] Includes Hong Kong and Kwantung.
Source: Bureau of Foreign and Domestic Commerce.

FISHERIES AND FISH CANNING

Production.

There are no complete statistics of quantity or value of the products of American fisheries covering any one year since 1908. However, data recently collected by the Bureau of Fisheries from several sections of the country (covering different years for different sections) show an annual catch of somewhat more than 2,502,000,000 pounds, with a value, not including that added by canning or other manufacturing processes, of more than $103,354,000. These figures include shellfish.

Table 88.—Value of Canned Fishery Products and By-Products of the United States and Alaska

[Values in thousands of dollars]

Product	1922	1923	1924	1925	1926	1927
Total value	**71,842**	**85,151**	**82,458**	**95,177**	**98,326**	**94,079**
Salmon	38,421	45,534	42,402	47,370	56,219	45,729
California sardines	3,361	4,608	5,446	6,381	7,807	9,269
Maine sardines	5,750	5,289	7,191	6,717	6,727	5,249
Tuna and tuna-like fishes	4,373	6,915	5,757	8,499	5,282	8,368
Shrimp and crabs	3,168	4,429	4,645	3,835	4,147	5,348
Clams	1,716	1,711	2,161	1,850	2,005	2,745
Oysters	2,424	2,720	2,478	3,721	2,027	2,368
Miscellaneous canned products	1,180	1,119	2,085	2,204	1,978	2,315
Menhaden-meal scrap and oil	6,127	6,411	3,310	5,623	3,442	3,690
Miscellaneous by-products	5,322	6,415	6,983	8,978	8,691	8,998

Source: Bureau of Fisheries, Department of Commerce.

Table 89.—Fish Landed at Boston and Gloucester, Mass., and Portland, Me.

[Quantity in thousands of pounds; value in thousands of dollars]

Kind, quantity, and value	1915–1920, average	1922	1923	1924	1925	1926	1927
All species:							
Quantity [1]	185,458	159,875	174,941	182,948	216,869	238,426	263,850
Value	7,881	5,466	7,051	6,993	8,116	9,058	9,405
Cod:							
Quantity	60,193	55,180	62,655	61,449	67,250	78,219	63,355
Value	2,496	1,635	2,184	2,138	2,321	2,647	2,147
Haddock:							
Quantity	67,233	70,196	73,762	79,902	91,886	94,061	128,593
Value	2,512	1,809	2,423	2,309	2,748	3,083	3,532
Halibut:							
Quantity	2,664	5,624	4,875	4,422	3,561	3,431	4,779
Value	395	784	923	790	655	671	840
Mackerel:							
Quantity	10,305	4,727	11,565	9,758	26,210	36,233	31,530
Value	913	276	488	542	1,191	1,406	1,296

[1] Includes minor species not shown separately.

Source: Bureau of Fisheries, Department of Commerce.

The most important centers of the fishing industry are on the North Atlantic coast, the Pacific coast, and in Alaska, although large quantities are caught along all of our coasts and in our lakes and rivers. The total value of canned fish products and by-products in the United States proper and in Alaska in 1927 was $94,079,000 as compared with $98,326,000 in 1926 (Table 88), which was owing entirely to the decrease in the value of salmon and Maine sardines; the value of all other canned fish products showed an increase as compared with the year preceding. (Tables 90 and 91.)

The landings of fresh fish at Boston and Gloucester, Mass., and Portland, Me., continued to increase. There were gains of 11 per cent in volume and 4 per cent in value, which was a result of the larger landings of both haddock and halibut. (Table 89.)

Table 90.—Production of Canned Salmon, United States Pacific Coast, and Alaska

[Thousands of cases]

Year	Total	United States Pacific coast			
		Puget Sound	Columbia River	Other	Alaska
1910	3,555	568	391	183	2,413
1916	6,361	707	548	186	4,920
1917	8,558	1,922	555	159	5,922
1918	8,076	624	591	183	6,678
1919	6,630	1,296	580	162	4,592
1920	5,136	167	482	58	4,429
1921	3,622	653	323	41	2,605
1922	5,231	249	392	89	4,501
1923	6,411	758	481	109	5,063
1924	6,246	318	501	121	5,306
1925	6,034	912	540	131	4,451
1926	7,491	310	480	68	6,633
1927	5,053	892	494	101	3,566

Source: Yearbook, "Pacific Fisherman."

Table 91.—Canned Salmon: United States and Alaska

Item	Production (thousands of 48-pound cases)				Item	Value (thousands of dollars)			
	1924	1925	1926	1927		1924	1925	1926	1927
Total	**6,254**	**6,019**	**7,489**	**5,077**	**Total**	**42,402**	**47,370**	**56,219**	**45,729**
Alaska	5,295	4,460	6,653	3,572	Alaska	33,007	31,990	46,080	30,016
Washington	542	1,133	490	1,091	Washington	5,062	10,080	5,428	10,158
Oregon and California	417	426	346	414	Oregon and California	4,332	5,300	4,711	5,554
						Average price of Alaska salmon, per case			
Coho or silver	415	469	431	464					
Chum or keta	1,276	1,212	1,051	653					
Humpback or pink	2,614	2,662	3,341	2,007					
King, chinook, or spring	383	483	402	476	Chum or keta	$4.68	$4.44	$5.01	$5.47
Red or sockeye	1,534	1,178	2,233	1,444	Humpback or pink	4.93	5.28	5.39	5.87
All other	32	15	31	33	Red or sockeye	9.53	13.12	9.89	12.08

Source: Bureau of Fisheries, Department of Commerce.

United States production of canned salmon in 1927 was 32 per cent less than in 1926, all of the decrease occurring in Alaska. (Table 90.) This decrease appeared in all three of the most important varieties of salmon. (Table 91.) The total sardine pack during 1927 was about 8½ per cent larger than in 1926. The Maine and Massachusetts pack was considerably smaller, but the loss in that section was more than counterbalanced by the increased pack in California. The total pack for the year was over 155,000,000 pounds, of which California supplied nearly 124,000,000 pounds. The factory value of the Eastern pack was $5,249,030 and that of California $9,268,784.

Prices.

The outstanding price change for salmon during the year 1927 was in the red or sockeye variety, the average price for the year being $12.08 per case as compared with $9.89 per case in 1926. The chum or keta and the humpback or pink varieties also showed increases, but the advances were small.

Foreign Trade.

The exports of the various forms of fresh and cured fish do not change much from year to year. The total export trade in these commodities is comparatively small, and production costs and available supplies are such that exports are not likely to expand rapidly.

Exports of canned sardines continue to increase. During the past year, partially on account of the short salmon pack, exports of sardines were more than double those of salmon. This growth is remarkable when it is remembered that in 1925, for the first time, the exports of canned sardines exceeded those of salmon. The popularity of the California sardine continues to increase, and this product is becoming better known and appreciated in other parts of the world. Canned salmon exports are faced with increasing Japanese competition, but it appears that markets still exist for all the salmon of the better grades which can be produced.

Table 92.—Exports of Fish

[Quantities in thousands of pounds; values in thousands of dollars]

Article	Quantity			Value			Principal country of destination	Quantity	
	1925	1926	1927	1910–1914[1]	1926	1927		1926	1927
Total	**180,900**	**162,634**	**158,432**	**9,709**	**19,904**	**18,341**	CANNED SALMON		
Fresh fish	10,516	6,829	8,079	2,088	870	911	Belgium	732	399
Salmon	4,234	3,062	3,079	1,811	488	472	Netherlands	654	368
Other	6,282	3,766	5,000	277	382	440	United Kingdom	25,358	20,737
Salted or dry cured fish	14,324	12,747	12,912	508	1,412	1,362	Canada	1,682	1,693
Salmon	1,626	2,122	2,356	(2)	455	510	Mexico	2,085	804
Herring	3,437	2,351	2,342	138	155	137	Cuba	640	312
Cod	4,382	3,954	3,820	222	424	374	Philippine Islands	8,141	4,742
Haddock, hake and pollock.	3,164	2,704	2,189		197	158	Australia	6,371	3,561
Other	1,716	1,616	2,204	148	181	182	SARDINES		
Pickled fish	6,395	4,975	4,470	147	939	881			
Canned fish	122,137	130,233	123,570	6,486	15,704	13,983	Belgium	2,662	3,328
Salmon	53,172	53,511	38,252	5,615	8,578	6,029	France	637	3,561
Sardines	62,713	71,285	79,440		6,126	6,818	Greece	542	1,698
Shellfish	4,051	3,443	3,863	657	691	826	United Kingdom	3,286	2,819
Other	2,201	1,993	2,015	214	308	311	Mexico	3,196	2,368
Shellfish not canned	6,795	6,356	7,483	386	839	1,053	Argentina	1,643	5,456
Other fish products	523	1,494	1,918	150	139	151	British India	6,284	6,443
							British Malaya	13,287	12,313
							Netherland East Indies	8,505	11,687
							China, Hong Kong, and Kwantung.	3,219	2,714
							Philippine Islands	11,938	12,689

[1] Fiscal years.
[2] Fresh salmon includes all salmon except canned.
[3] Average for years 1910 and 1912–1914; 1911 included in average for "Other fish products."
[4] Excludes pickled salmon.
[5] Oysters only, canned and fresh.
[6] All shell fish other than oysters, canned and fresh.

Source: Bureau of Foreign and Domestic Commerce.

FUEL AND POWER

GENERAL ASPECTS

The Expanding Use of Mechanical Power and Industrial Heat.

A major factor in the high and increasing per capita production of American industry is the great and growing use of mechanical power and of heat for industrial processes. The extent to which mechanical power is used as an aid to production can be roughly judged by the statistics of the capacity of power equipment in factories, mines, and electric plants. A still broader view is obtained from statistics of the aggregate production of the sources of power, namely, the mineral fuels and water energy. A great part of this total output is devoted to the generation of mechanical power—the operation of prime movers—and a large part of the remainder to the generation of heat for industrial processes. The latter is, of course, just as real an aid to human strength as the former.

Table 1.—Capacity of Prime Movers in Factories, Mines, and Electric Plants

NOTE.—Data for factories and mines (except mines in 1902) relate to 1899, 1909, 1914, 1919, 1923, and 1925; those for electric plants (except estimate for 1925) relate to 1902, 1907, 1912, 1917, 1922.

[In thousands of horsepower]

Year	Total	Factories	Mines	Electric plants			Per cent in electric plants
				Central stations	Street railways	Total	
1899–1902	15,427	9,778	[1] 2,625	1,845	1,359	3,204	20.8
1907–1909	27,824	16,803	4,403	4,098	2,520	6,618	23.8
1912–1914	34,297	18,406	[2] 4,700	7,530	3,661	11,191	32.6
1917–1919	42,287	20,038	5,112	12,937	4,200	17,137	40.5
1922–23	49,240	19,724	[2] 5,100	20,296	4,119	24,416	49.6
1925 [3]	57,504	19,904	[2] 5,100	----------	----------	[2] 32,500	56.5
Increase 1899–1902 to 1922–23:							
Amount	33,813	9,946	2,475	18,451	2,760	21,212	----------
Per cent	219.2	101.7	94.3	1,000.1	203.1	662.0	----------

[1] Relates to 1902; the figure of total power has been reduced slightly to exclude electric motors.
[2] Estimate.
[3] Partly estimated.

The total horsepower capacity of prime movers in manufacturing and mining establishments and electric plants in 1925 was approximately 57,504,000. The corresponding figure a quarter century ago was about 15,400,000 horsepower, the total having thus increased nearly fourfold. (Table 1.) As compared with 1880, the increase has been at least elevenfold.

The relation of the capacity of prime movers in factories, mines, and quarries, and on railways to the number of workers is shown in

further detail in Table 2. In this table the figures given for manufacturing and mining establishments include the capacity of electric motors operated by current purchased from central electric power stations.

Table 2.—Relation of Power Equipment to Number of Workers

[Wage earners, employees, and horsepower, in thousands; tractive power of locomotives, in millions of pounds; ratios as indicated]

Year	Wage earners (average number)	Horsepower of prime movers		Year	Employees	Tractive power of locomotives	
		Total	Per wage earner (units)			Total	Per employee (pounds)
MANUFACTURING INDUSTRIES				RAILWAYS			
				Fiscal years:			
1879	2,733	3,411	1.2	1899	929	[2] 660	710
1899	4,713	[1] 10,000	2.1	1909	1,503	1,549	1,030
1909	6,615	18,675	2.8	1914	1,710	2,078	1,215
1914	7,015	22,264	3.2	Calendar years:			
1919	9,031	29,298	3.2	Class I—			
1923	8,768	33,057	3.8	1919	1,913	2,313	1,209
1925	8,384	35,773	4.3	1923	1,858	2,544	1,370
				1925	1,744	2,587	1,483
MINING AND QUARRYING				1926	1,779	2,611	1,468
1902	582	2,868	4.9				
1909	1,065	4,608	4.3				
1919	1,088	6,724	6.2				

[1] Approximate, excluding hand and neighborhood industries.
[2] Number of locomotives, 36,703; estimated average capacity, 18,000 pounds.

In 1879 each wage earner in American factories was, on the average, aided by 1.2 horsepower, in 1899 by 2.1, and in 1925 by 4.3 horsepower. The aggregate tractive power of locomotives at the present time is nearly four times as great as at the beginning of the century, while the number of railway employees (including, of course, many who are in no way directly concerned with the use of locomotives) has less than doubled. The more powerful locomotive requires no more men to operate it than the smaller one, and usually the longer train hauled likewise requires no more trainmen.

A convenient method of presenting the facts as to the total use of the sources of power and heat is to convert all these sources to a common denominator, the number of energy units they contain. In Table 3 the production or consumption of coal, petroleum, and natural gas are expressed in terms of British thermal units, in accordance with their relative heat values. Similarly the production of water power is expressed in terms of the British thermal units necessary to develop the same amount of power in steam engines of ordinary efficiency.

The combined production of all sources of power in this country is nearly one-half of the world total. In the case of coal our production is more than two-fifths, in the case of petroleum about seven-tenths,

and in the case of water power more than one-third. In addition, the United States is almost the sole producer of natural gas, the supply of which in 1927 was equivalent to about 55,000,000 tons of coal.

In terms of per capita consumption the position of the United States is even more striking. In 1923, a representative year, our consumption of power and heat in all forms (as distinguished from the production) was 191,000,000 British thermal units per capita, against 160,000,000 in Canada, 110,000,000 in the British Isles, 76,000,000 in Germany, 57,000,000 in France, 15,000,000 in Japan, and 2,000,000 in British India. The per capita use of energy in the United States is thus about three times that of France, thirteen times that of Japan, and ninety times that of British India.

In many countries exports and imports of coal and oil are large in relation to the consumption, but in the United States they are relatively small and the production of the sources of power will serve as an index of the consumption. Table 3 shows the production of energy materials during the last half century, including, for the sake of completeness, the imports of crude oil which have recently become of importance in supplying American refineries.

Table 3.—Annual Supply of Energy from Mineral Fuels and Water Power in the United States—Total and Per Capita

[The figures represent trillions of British thermal units. Data represent production, except those for oil imports, and take no account of changes in stocks]

Annual average or year	Anthracite coal	Bituminous coal	Total coal	Domestic oil	Natural gas	Imported oil	Total oil and gas	Water power [1]	Grand total fuels and water power	Per capita—million B. t. u.	
										Coal	All sources
1871–1875	637	754	1,391	49	----	----	49	(1)	1,520	33	36
1876–1880	718	955	1,673	101	----	----	101	(1)	1,857	35	39
1881–1885	985	1,863	2,848	153	[2] 24	----	177	(1)	3,110	53	57
1886–1890	1,195	2,474	3,669	198	[2] 264	----	462	(1)	4,221	61	70
1890–1895	1,453	3,286	4,739	307	[2] 166	----	473	104	5,316	71	79
1896–1900	1,513	4,493	6,006	357	[2] 198	----	555	129	6,690	82	91
1901–1905	1,818	7,140	8,958	612	323	----	935	209	10,102	111	125
1906–1910	2,207	9,783	11,990	1,037	470	1	1,508	369	13,867	135	156
1911–1915	2,427	11,527	13,954	1,486	619	72	2,177	591	16,722	145	173
1916–1920	2,523	13,981	16,504	2,176	820	297	3,293	851	20,648	159	199
1921–1925	2,112	12,610	14,722	3,888	1,024	569	5,481	1,105	21,308	132	191
1913	2,490	12,535	15,025	1,491	626	102	2,219	588	17,831	156	185
1918	2,688	15,180	17,868	2,136	775	226	3,137	837	21,842	172	211
1925	1,681	13,625	15,306	4,582	1,278	371	6,231	1,290	22,827	133	198
1926	2,297	15,022	17,319	4,625	1,411	362	6,398	1,492	25,209	148	215
1927 [3]	2,194	13,619	15,813	5,367	1,473	349	7,189	1,687	24,689	133	208

[1] The fuel equivalent for water power is calculated from the reported horsepower of installed water wheels. Prior to 1890 data were unsatisfactory, but estimates are included in the total.
[2] Based on the amount of coal displaced by gas, as estimated by the gas companies at the time.
[3] Preliminary.

Source: Bureau of Mines, Department of Commerce.

The total production of coal itself in 1927 was 600,000,000 short tons. The production of oil and gas had a heat value equivalent to 274,000,000 tons of coal, and the water power to 64,000,000 tons, making an aggregate equivalent to 938,000,000 tons of coal. Much

of the petroleum, however, is used for purposes that coal can not readily meet, and in order to avoid the impression that all the oil is directly displacing coal the figures in Table 3 are expressed in British thermal units.

The per capita supply of energy from all sources in 1927 was 208,000,000 British thermal units, a slight decrease in comparison with 1926. In comparison with early years, however, there has been an enormous increase. From 1870 to 1900 the supply per capita increased about fourfold, and from 1900 to 1927 it doubled; for the entire period from 1870 to 1927 the increase was thus about eightfold.

The comparison with 1870 somewhat exaggerates the increase in the use of fuels because the data do not include firewood, which was employed relatively much more extensively a few decades ago than at present. Since 1900 the change with respect to the use of firewood has not been very great and the present consumption is probably equivalent to about 50,000,000 tons of coal.

The Increasing Efficiency of Fuel Consumption.

At the same time that the quantity of fuel consumed has been increasing the efficiency of utilization has also been increasing. Since the introduction of the steam engine repeated improvements have served to increase the amount of energy derived from a given quantity of fuel. The increase in the size of boilers and of engines, the substitution for many purposes of the turbine for the reciprocal engine, and the introduction of compound engines, devices for rapid and complete condensation of steam, mechanical stokers, the use of pulverized coal, and many other technical improvements have actually increased several fold the efficiency of steam generation within the past few decades.

This progress in fuel efficiency has been particularly rapid since the World War. High prices and physical shortages of coal and petroleum during the war drew the attention of consumers to fuel economy to a degree unknown before and led not only to the construction of new and better plants but to great improvement in practice at existing plants. The consumption of coal per kilowatt-hour by electric central stations was reduced 42 per cent from 1919 to 1927. At the same time the central stations were taking over the load formerly carried by isolated factory power plants, so that these remarkable economies were being applied to a steadily increasing proportion of the power requirements of the country. The consumption of locomotive fuel per 1,000 gross-ton miles declined from 176 pounds in 1917 to 131 in 1927, a reduction of 26 per cent.

Similar economies were effected in the use of fuel in metallurgical work. The consumption of coking coal per ton of pig iron fell from 3,428 pounds in 1919 to 3,017 pounds in 1926, a reduction of 12 per

cent. At the same time rapid construction of by-product coke ovens was saving the gas and tar formerly wasted in the beehive ovens, and the coal equivalent of these by-products now amounts to about 15,000,000 tons a year, as against less than 3,000,000 tons before the war.

Relative Importance of the Several Sources of Heat and Power.

The improvement in the efficiency of fuel consumption has tended to check the growth in demand for coal. Of perhaps equal importance in the same direction is the increase in the use of oil, gas, and water power. From 1913 to 1927 the country's total supply of energy in all forms increased 39 per cent. Most of this increase came from the competitors of coal. The production of coal during this period increased only 5 per cent, but the production of natural gas increased 135 per cent, of domestic petroleum 260 per cent, and of water power 187 per cent. The growth of petroleum was stimulated by technical advances in methods of production and in the last five years by the discovery of a number of very large oil pools. The development of water power has been especially rapid since the passage of the Federal water-power act in 1920.

As a result there has been a remarkable shift in the sources of the energy consumption of the United States. In 1913, of the combined supply of mineral fuels and water power, coal itself represented about 84 per cent, water power less than 4 per cent, and oil and gas together 12 per cent. In 1927 the share of coal had fallen to 64 per cent, while that of water power had increased to 7 per cent and that of oil and gas to 29 per cent.

The increase in the production of oil, gas, and water power, however, has not been altogether at the expense of coal. Much of the heat and energy developed from these other sources would presumably never have been generated at all without their use. In particular it is quite possible that except for the great increase in production of petroleum the use of automobiles would have remained comparatively small. So, too, the development of oil fields and water power in the West has made possible the many power-using industries in that section which would not have existed otherwise. Nevertheless, oil, gas, and water power are in many fields direct competitors of coal.

Influence of Fuel Economy and Competition upon Demand for Coal.

The two factors, competition of other sources of power and increasing fuel efficiency, have combined to arrest the former rapid growth of coal demand and are a major cause of the depression in the coal industry not only in the United States but in other countries. The world output of lignite has continued to expand, chiefly through the growth of the brown-coal industry of Germany, but the output

of bituminous coal and anthracite has shown no material advance since 1913. Before the World War the world production of coal (not including lignite) was growing at the rate of 31,000,000 metric tons a year. Had the pre-war rate of increase continued, the production in 1927 would have been 434,000,000 tons greater than in 1913. Actually it was only 65,000,000 tons greater. Indeed, 1927 is the only year since the war in which the production of anthracite and bituminous coal has equaled the level reached in 1913.

In Europe this change in demand has been due in part to the economic disorganization wrought by the war, which led for a time to an absolute decrease in the amount of fuel consumed in a number of the former belligerent countries. But in the world as a whole, as in the United States, the consumption of energy in all forms has increased. Counting oil, gas, water power, and lignite as well as coal, the world's consumption of energy was 27 per cent greater in 1927 than in 1913. The increase has come almost entirely from competitors of coal. Whereas the world production of bituminous and anthracite coal increased only 5 per cent from 1913 to 1927, the production of lignite increased 53 per cent, the production of water power more than doubled, and the production of oil and gas trebled. As a result, the proportion of the world's total energy contributed by anthracite and bituminous coal declined from 85 per cent in 1913 to 71 per cent in 1927, and the proportion from the other sources, including lignite, rose from 15 to 29 per cent.

These fundamental changes in the energy market are an underlying cause of the world-wide depression in the coal trade. Coupled with an expansion of mine capacity, they have brought about a widespread tendency to overproduction, which bears heavily on prices, profits, and the wages of coal-mine labor.

ELECTRIC LIGHT AND POWER

SUMMARY.—During 1927 the public utility companies, including electric railways, produced in excess of 80,000,000,000 kilowatt-hours of electric energy, about four and one-half times the output of 1912. This was an increase of about 9 per cent over 1926, which was somewhat smaller than the annual average increase for the past several years. (Table 4.) The capacity of equipment from year to year since 1923 has shown a declining ratio of increase, which indicates the increasingly efficient employment of equipment. Current produced by water power in 1927 showed an increase of 14 per cent over 1926, and that produced from fuel power 5.7 per cent, but this increase in current produced by fuel power necessitated no increase in use of fuel. There has been a marked increase in efficiency in the use of fuel; 74 per cent more current can now be generated with a given quantity of fuel than was possible in 1919.

GENERAL POSITION OF THE INDUSTRY

The growth of the electric light and power industry in the United States has been one of the remarkable developments of the last quarter century. The capacity of the earlier forms of generating units was

less than 100 kilowatts, but to-day a maximum capacity of 150,000 kilowatts has been realized. In the past 25 years the aggregate capacity of generators in central electric stations and electric railways has increased about thirteen times, while the actual output of such stations was almost seventeen times greater in 1927 than in 1902. Electric-energy consumption has been increasing at a rate about three and three-quarter times the increase in population. Production of electric current in 1927 amounted to about 676 kilowatt-hours per inhabitant as compared to 630 kilowatt-hours in 1926. Table 4 shows for the past quarter of a century the increase in output and growth of electrical equipment not only in central stations but in factories and mines as well.

Table 4.—Growth of Electric Equipment and Output

Year	Current generated by public plants			Capacity of equipment					
				Generators		Motors run by current generated by establishment		Motors using purchased power	
	Total	Central stations	Electric railways	Central stations	Electric railways	Factories	Mines	Factories	Mines
	Millions of kilowatt-hours	*Millions of kilowatt-hours*	*Millions of kilowatt-hours*	*Thousands of kilowatts*	*Thousands of kilowatts*	*Thousands of horsepower*	*Thousands of horsepower*	*Thousands of horsepower*	*Thousands of horsepower*
1902	[1] 4,768	2,507	2,261	1,212	[2] 900				
1904						1,151		442	
1907	[1] 10,621	5,862	4,759	2,709	1,723				
1909						3,068	494	1,749	206
1912	[1] 17,572	11,569	6,003	5,165	2,505				
1914						4,939		3,885	
1917	[1] 32,679	25,438	7,241	8,994	2,925				
1919						6,969	1,259	9,284	1,603
1922	[1] 46,764 [3] 47,654	40,291	6,473	14,313 15,971	2,973				
1923	[3] 55,665			17,369		8,821		13,365	
1924	[3] 59,014			19,519					
1925	[3] 65,870			23,619					
1926	[3] 73,791			25,398					
1927	[3] 80,205			27,691					

[1] Total as reported by the Bureau of the Census for central stations and electric railways.
[2] Estimated.
[3] Total as reported by the Geological Survey.
Sources: Geological Survey, Department of the Interior, and Bureau of the Census.

The United States has about one-half of the total world capacity of public-utility electric plants. In only three other countries—Norway, Canada, and Switzerland—is the output per capita greater than in the United States, but much of the Swiss current is exported or used by heavy traction electrifications, while in the other two countries the paper-making and electrochemical industries consume large quantities. The United States is far ahead of any other country in the general household use of electricity. In Japan, which shows the next largest number of domestic consumers, the situation

is quite different from that in Europe and America, for in the Far East a consumer may be represented by the installation of a single light. The territory around Niagara Falls and Buffalo, N. Y., receives each year a large amount of electric energy from Canada, while one of our western States annually sends Canada several million kilowatt-hours of electric energy. During 1927, 4,868,000 kilowatt-hours of electric energy were exported to Canada and 1,632,609,000 kilowatt-hours imported.

Water Power in the United States.

The utilization of water power in the United States has been of considerable importance in the production of electricity by public-utility power plants. In spite of the remarkable increase in the efficiency of the utilization of fuels by fuel-burning power plants since 1919, the production of electricity by the use of water power was more than one-third of the total output for each year from 1919 to 1927.

In November, 1921, the developed water power in plants of 100 horsepower or more was 7,927,000 horsepower, 78 per cent of which was in public-utility power plants. On January 1, 1928, the developed water power in the United States was 12,296,000 horsepower, an increase of 55 per cent in little more than six years. Public-utility plants had about 86 per cent of the total developed water power in January, 1928.

Development is proceeding more rapidly in the South Atlantic, East South Central, and Pacific States than in other sections. Water-power development has, however, increased in all sections of the country. Those sections of the country in which water power is developing slowly have relatively small resources of water power or, as in New England, the greater part of the water-power resources has been developed. In some States past or proposed legislation has to some extent delayed development.

Table 5.—Developed Water Power in the United States, by Geographic Divisions

[Capacity in thousands of horsepower]

Geographic division	November, 1921	March, 1924	March, 1925	January, 1926	January, 1927	January, 1928
Continental United States	**7,927**	**9,087**	**10,038**	**11,177**	**11,721**	**12,296**
New England	1,311	1,387	1,399	1,485	1,535	1,556
Middle Atlantic	1,479	1,732	1,948	1,995	2,056	2,078
East North Central	739	830	885	979	1,010	1,037
West North Central	444	460	515	525	533	542
South Atlantic	1,082	1,301	1,594	1,702	1,841	1,967
East South Central	241	341	392	745	868	966
West South Central	16	17	31	32	32	44
Mountain	827	881	937	981	1,030	1,118
Pacific	1,789	2,139	2,336	2,733	2,815	2,988

Source: Geological Survey, Department of the Interior.

Production of Electric Current and Fuel Consumption.

The production of 80,205,000,000 kilowatt-hours by public-utility companies in 1927 is greater by 8.7 per cent than that for 1926. It is two and one-half times that of 1917, and seven and one-half times that of 1907. The output of hydroelectric plants was 14 per cent greater than in 1926, whereas the production of fuel-burning plants was only 5.7 per cent greater. As compared with 1919, both the fuel-power and water-power output were more than doubled in 1927.

Table 6.—Public Utility Electric Plants: Output and Fuel Consumption

Year	Output (millions of kilowatt-hours)			Consumption of fuel (coal or coal equivalent)	
	Total	Water power	Fuel power	Amount (thousands of tons)	Pounds per kilowatt-hour
1919	38,921	14,606	24,315	38,880	3.2
1920	43,555	16,150	27,405	41,420	3.0
1921	40,975	14,970	26,005	35,240	2.7
1922	47,654	17,207	30,447	38,000	2.5
1923	55,665	19,343	36,322	43,522	2.4
1924	59,014	19,969	39,044	43,130	2.2
1925	65,870	22,356	43,514	44,780	2.1
1926	73,791	26,189	47,602	45.856	1.95
1927	80,205	29,875	50,330	45,910	1.84
Per cent increase, 1927 over—					
1919	106.1	104.5	107.0	18.1	−42.5
1926	8.7	14.1	5.7	.1	−5.6

Source: Geological Survey, Department of the Interior.

As a result of the introduction of more efficient methods of fuel utilization, from year to year there has been a constant reduction in the quantity of fuel consumed per unit of electric current produced. Considering all fuels except wood,[1] reduced to the common basis of coal equivalent, there has been a reduction of 42 per cent since 1919 in the amount of fuel required to produce a unit of electric current, and in 1927, as compared with 1926, there was a reduction of 5.6 per cent. From the point of view of production, this means that in 1927 from a given amount of fuel 74 per cent more current was produced than in 1919 and almost 6 per cent more than in 1926.

Coal is the principal fuel used in producing electric power, constituting about 90 per cent of the total in terms of coal, while fuel oil and gas together constitute about 10 per cent. The use of fuel oil in generating electric energy has been decreasing since 1924, when it reached a maximum of 16,630,000 barrels, owing to the increased efficiency in the use of coal and the more extended use of bulk supply. The use of gas for the generation of electric current, though considerable in certain States where natural gas is abundant, is not

[1] In 1926, 335,899,000 kilowatt-hours of electric current were produced by the use of wood in the United States.

a very important factor in the total for the entire country. In 1927 approximately 41,900,000 short tons of coal, 6,800,000 barrels of fuel oil, and 62,900,000,000 cubic feet of gas were consumed in the generation of electric current, increases, as compared with 1926, of 1 per cent and 18 per cent in the quantity of coal and gas, respectively, and a decrease of 28 per cent in that of fuel oil. (Table 7.)

Table 7.—Annual Consumption of Fuel in the Production of Electricity by Public Utility Power Plants

Year	Coal		Fuel oil		Gas	
	Quantity	Index number	Quantity	Index number	Quantity	Index number
	Thousand short tons		*Thousand barrels*		*Million cubic feet*	
1919	35,100	100	11,050	100	21,406	100
1920	37,124	106	13,123	119	24,702	115
1921	31,585	90	12,045	109	23,722	111
1922	34,179	97	13,197	119	27,172	127
1923	38,966	111	14,684	133	31,433	147
1924	37,556	107	16,630	150	48,443	226
1925	40,222	115	10,246	93	46,521	217
1926	41,311	118	9,399	85	53,207	249
1927	41,888	119	6,782	62	62,919	294

Source: Geological Survey, Department of the Interior.

Use of Fuel Power and Water Power.

The relative importance of the various types of prime movers installed in public-utility electric plants, including electric railways, for each census year since 1902 is shown in Table 8. About one-fourth of the total horsepower of prime movers in these plants in 1922 was operated by water power and three-fourths by fuel power. Twenty years earlier the hydroelectric equipment represented only 15 per cent of the total, while in 1917 it was almost 29 per cent. Although the United States still has enormous undeveloped water-power resources (only about one-fifth of the water power had been developed in 1924), these are limited to certain geographic regions, and the initial expense of harnessing this power is so great that fuel will probably continue to be the chief source of power production.

In 1919 the production of electric current by water power was 37.5 per cent of the total output. The ratio was considerably lower in 1922, but rose to 37.2 per cent in 1927. From year to year it appears that, although the water-power equipment represents on an average only about one-fourth of the total, the output from water power, owing to more continuous use of equipment, is somewhat greater than one-third of the total.

Table 8.—Use of Fuel Power and Water Power in Public Utility Electric Plants

Year	Horsepower of prime movers (thousands)				Per cent of total		
	Total	Water wheels and turbines	All steam and gas engines	Steam turbines	Water wheels and turbines	All steam and gas engines	Steam turbines
1902	3,177	489	2,688	(1)	15.4	84.6	
1907	6,618	1,441	5,177	1,352	21.8	78.2	20.4
1912	11,191	2,940	8,251	4,517	26.3	73.7	40.4
1917	17,137	4,905	12,231	9,070	28.6	71.4	52.9
1922	24,415	6,226	18,189	15,211	25.5	74.5	62.3

[1] No data.

Source: Bureau of the Census.

Growth of Central Electric Stations.

The value of plant and equipment of central stations at the end of 1927 exceeded $8,000,000,000, or approximately four times that of 1912. Gross revenue amounted to about 22 per cent of the total investment. The increase in the gross revenue of these companies during the same period was nearly 500 per cent, whereas average retail lighting rates declined 16 per cent.

Domestic and Industrial Use of Electric Current.

From the beginning of 1913 to the end of 1927 the number of customers for electric light and power increased 465 per cent. In 1912 only 16 per cent of the population lived in electric-lighted dwellings, but 63 per cent had electric lights in 1927. Of the total number of consumers, year in and year out, about 81 per cent use the current for domestic lighting, and the other 19 per cent for commercial lighting and industrial power. This ratio, however, is not indicative of the quantity of power consumed for these purposes, respectively, for according to the census of 1922, about one-third of the current sold was for domestic lighting purposes (including domestic power and heating) and two-thirds for industrial and general power purposes.

Table 9.—Operations of Central Stations

Item	1912 [1]	1919	1924	1925	1926	1927
Value of plant and equipment, end of year—millions of dollars	2,176	3,712	5,762	6,483	7,325	8,084
Gross revenue—do	302	774	1,355	1,480	1,652	[2] 1,784
Average retail lighting rates—cents per kilowatt-hour	[3] 8.7	7.8	7.6	7.5	7.4	7.3
Number of customers, end of year—thousands	3,838	9,899	16,769	18,472	20,179	21,694
Domestic light—do	3,101	8,010	13,567	14,965	16,359	17,596
Commercial light—do	606	1,550	2,626	2,723	2,963	3,167
Industrial power—do	131	339	576	784	856	931
Per cent of total population living in electric-lighted dwellings, end of year	16	33	51	56	60	63

[1] Data, except for lighting rates, are from Bureau of the Census.
[2] Estimated, based on 10 months' operations.
[3] Year 1913.

Source: Electrical World.

The increase in the total electric current has been more than threefold since 1912 and the output per capita increased from 192 kilowatt-hours in 1912 to 676 kilowatt-hours in 1927 for the United States as a whole. (Table 10.) All sections of the country shared in this increased development, but it was most marked in the sections of the South, where up to 1912 less progress had been made. The South Atlantic division showed the greatest percentage increase in total output of current, while the East South Central States had the greatest percentage increase per capita.

Table 10.—Output of Electric Current, by Geographic Divisions

NOTE.—The 1926 and 1927 figures, from the Geological Survey, are on a slightly different basis from those for other years, but are quite closely comparable.

Geographic division	Output of current (millions of kilowatt hours)					Output per capita (kilowatt-hours)		Number of consumers Jan. 1, 1928 (thousands)
	1907	1917	1922	1926	1927	1926	1927	
Continental United States	**10,621**	**32,679**	**46,765**	**73,791**	**80,205**	**629**	**676**	**21,694**
New England	1,015	2,642	3,598	5,166	5,471	638	669	1,931
Middle Atlantic	3,679	9,332	12,460	20,527	21,717	835	872	5,953
East North Central	2,343	7,532	10,781	17,664	18,843	730	767	5,418
West North Central	787	2,454	3,585	4,587	4,841	350	367	2,222
South Atlantic	644	2,588	4,826	7,197	8,768	459	552	1,454
East South Central	298	1,252	1,545	3,049	3,408	327	364	671
West South Central	258	788	1,494	2,640	3,315	230	285	1,168
Mountain	446	2,136	2,318	3,425	3,520	871	877	612
Pacific	1,150	3,954	6,158	9,537	10,322	1,417	1,499	2,264

Sources: Geological Survey, Department of the Interior, Bureau of the Census, Department of Commerce, and Electrical World.

Electrification of the Manufacturing Industry.

The increase in the electrification of the manufacturing industry in the United States is indicated by the figures in Table 11. According to the census of manufactures, the horsepower of prime movers owned by factories in 1925 was 19,904,000 as compared with 18,406,000 in 1914. Moreover, the increase in the horsepower of electric motors operated by purchased current was 308 per cent and of those operated by prime movers owned by factories, 108 per cent. Assuming that the latter were operated at 72 per cent of capacity, the capacity of factory prime movers used to actuate them represented 7,380,000 horsepower in 1925. This figure added to that for motors operated by purchased current gives a total of 23,249,000 horsepower of electrified power, or 65 per cent of the total power equipment in 1925. The percentage of electrification was about twice as large in 1927 as in 1914.

The latest available data on the use of electric power in mines and quarries are for the year 1919. At that time the horsepower of motors which operated on purchased current was 1,603,000, while motors with 1,259,000 horsepower were operated by current generated

by the establishments themselves. Although it is scarcely probable that the increase in electrification in mines and quarries had kept pace with that in manufacturing establishments, there has undoubtedly been much progress in the same direction.

Table 11.—Capacity of Prime Movers and Electric Motors in Manufacturing Plants

Item	Horsepower (thousands)		
	1914	1923	1925
Prime movers owned by factories	18,406	19,724	19,904
Electric motors operated by purchased current	3,885	13,333	15,869
Total power equipment	22,291	33,057	35,773
Electric motors operated by prime movers owned by factories	4,939	8,819	10,255
Estimated capacity of factory prime movers used to actuate motors	3,550	6,350	7,380
Total power "electrified"	7,435	19,683	23,249
Per cent of "electrification"	33	60	65

Source: Basic figures from Bureau of the Census.

Rates.

Statistics of the retail prices of electricity in 51 cities reported by the Bureau of Labor Statistics show that the rates were lowered in more cities between December, 1926, and December, 1927, than between December, 1925, and December, 1926. However, the rates in most of the cities remained unchanged from the year preceding. In 14 cities there was an average lowering of eight-tenths of a cent per kilowatt-hour. In only one city was there an increase during this period and this amounted to only one-tenth of a cent per kilowatt-hour. In the majority of cities, moreover, there has been a marked decline in rates as compared with December, 1913, which amounted on the average to about 16 per cent. (Table 9.)

Several cities have sliding scales based on a variable number of kilowatt-hours payable at each rate which is determined for each customer according to the watts of installation in the individual home. The number of watts so determined is called the customer's "demand." Special allowance is also made for household appliances up to a certain limit, and lower rates are granted for power and heat units.

COAL

SUMMARY.—Bituminous coal production in 1927 totaled 519,804,000 short tons, which was a decrease of 9 per cent from the preceding year. In many of the fields employing union labor the mines were idle for several months after March 31 through failure to establish a new wage contract. Anthracite production was 80,652,000 short tons, or 4½ per cent less than in 1926; operation was fairly regular throughout the year. Beehive coke production amounted to 7,004,000 short tons, a decrease of 44 per cent, while by-product output aggregated 43,921,000 tons, which was only slightly less than in the preceding year.

Commercial stocks of bituminous coal increased from 55,000,000 short tons on January 1 to 75,000,000 tons on April 1, the largest total ever recorded, but receded to 55,500,000 tons at the end of the year.

The average spot price of bituminous coal f. o. b. the mines was $1.99 per short ton, a decline of 22 cents from the preceding year and the lowest average recorded since 1916. Spot prices declined throughout most of the year, although there was a temporary recovery in August and September. The average wholesale price of anthracite egg at New York tidewater declined to $10.96 from the peak of $11.48 reached in 1926.

Exports of bituminous and anthracite coal were 18,012,000 and 3,326,000 short tons, respectively. Owing to the disappearance of the abnormal foreign demand, bituminous coal exports were only about one-half as large as in the preceding year; Canada and Cuba were practically the only countries taking larger amounts in 1927. Imports of bituminous and anthracite coal were 549,843 and 119,030 short tons, respectively, an increase of 3 per cent for bituminous coal and a decrease of 85 per cent for anthracite. Both exports and imports of coke were smaller in 1927 than in 1926.

Table 12.—Coal and Coke Summary

NOTE.—All quantity figures are in thousands of short tons. Figures for 1927 are preliminary.

Item	1913	1921	1924	1925	1926	1927	Per cent change 1927 from 1926
World production	1,479,000	1,250,000	1,496,000	1,512,000	1,505,000	1,626,000	+8.0
UNITED STATES							
Production:							
Bituminous	478,435	415,922	483,687	520,053	573,367	519,804	−9.3
Anthracite	91,525	90,473	87,927	61,817	84,437	80,652	−4.5
Exports:							
Bituminous [1]	20,145	23,131	17,100	17,462	35,272	18,012	−48.9
Anthracite	4,653	4,677	4,018	3,179	4,030	3,326	−17.5
Average weighted mine price of bituminous, per short ton	$1.23	$2.55	$2.08	$2.06	$2.21	$1.99	−10.0
Price of anthracite egg at New York, per long ton	$5.06	$10.22	$11.35	$11.11	$11.48	$10.96	−4.6
Coke production	46,300	25,288	44,270	51,267	56,866	50,925	−10.4
Price of furnace coke, Connellsville	$2.98	$4.63	$4.42	$4.61	$4.96	$4.11	−17.1

[1] Does not include fuel or bunker coal laden on vessels engaged in foreign trade.

PRODUCTION

Bituminous Coal.

Preliminary figures show an output of 519,804,000 net tons of bituminous coal in 1927, compared with a production of 573,367,000 net tons in 1926, representing a decrease of 9.3 per cent. (Table 13.) This compares with the average of previous postwar years (1919–1926) of 501,799,000 net tons. The decreased output in 1927 resulted from the lighter demand of American consumers and a return of annual export demand to normal figures.

The production of bituminous coal in recent years has shown a much smaller increase than the annual output of many other industries, and the rate of increase has also been less rapid than the industry itself showed during many decades preceding the war. These developments have resulted from greater efficiency in the utilization of coal for power and the increased use of oil, gas, and water power, a situation which has affected the world's coal production in general.

Table 13.—Coal: Production and Value

NOTE.—Production and value include coal consumed at mines. Bituminous coal includes brown coal and small amounts of anthracite outside of Pennsylvania, the anthracite figures relating to the Pennsylvania product only.

Yearly average	Thousands of short tons			Year	Thousands of short tons			Thousands of dollars	
	Total	Anthracite	Bituminous		Total	Anthracite	Bituminous	Anthracite	Bituminous
1841–1845	3,192	1,719	1,472	1910	501,596	84,485	417,111	160,275	469,282
1846–1850	5,879	3,676	2,203	1911	496,371	90,464	405,907	175,189	451,376
1851–1855	10,805	6,714	4,091	1912	534,467	84,362	450,105	177,623	517,983
1856–1860	14,221	8,577	5,644	1913	569,960	91,525	478,435	195,181	565,235
1861–1865	20,538	11,142	9,396	1914	513,525	90,822	422,704	188,181	493,309
1866–1870	31,706	16,281	15,425	1915	531,619	88,995	442,624	184,653	502,038
1871–1875	52,179	23,407	28,773	1916	590,098	87,578	502,520	202,010	665,116
1876–1880	62,261	25,800	36,461	1917	651,402	99,612	551,791	283,651	1,249,273
1881–1885	107,291	36,198	71,093	1918	678,212	98,826	579,386	336,480	1,491,810
1886–1890	138,398	43,952	94,446	1919	553,952	88,092	465,860	364,927	1,160,616
1891–1895	178,822	53,405	125,416	1920	658,265	89,598	568,667	434,252	2,129,933
1896–1900	227,123	55,625	171,498	1921	506,395	90,473	415,922	452,305	1,199,984
1901–1905	339,357	66,854	272,503	1922	476,951	54,683	422,268	273,700	1,274,820
1906–1910	454,555	81,142	373,413	1923	657,904	93,339	564,565	506,787	1,514,621
1911–1915	529,189	89,233	439,955	1924	571,613	87,927	483,687	477,231	1,062,626
1916–1920	626,386	92,741	533,645	1925	581,870	61,817	520,053	327,665	1,060,402
1921–1925	558,947	77,648	481,299	1926	657,804	84,437	573,367	474,164	1,183,412
				1927 [1]	600,456	80,652	519,804	430,000	1,040,000

[1] Preliminary; subject to revision.

Source: Bureau of Mines, Department of Commerce.

Table 14.—Coal Production, by Months

[In thousands of short tons]

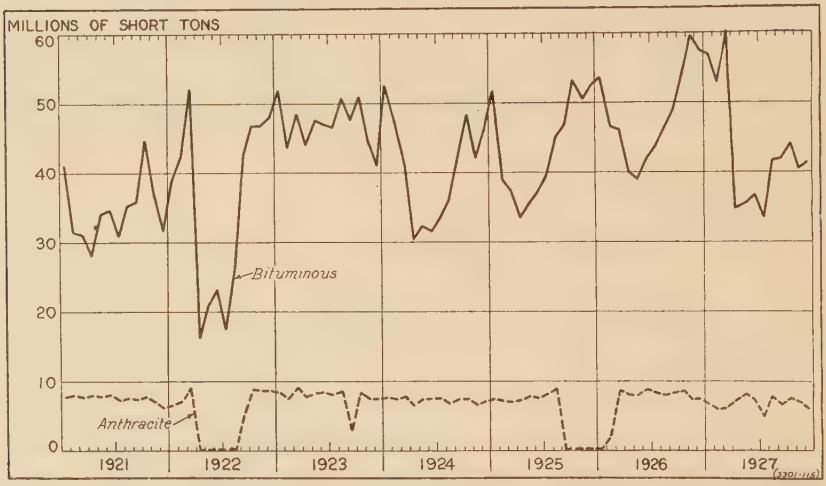
Year and month	Bituminous							
	1920	1921	1922	1923	1924	1925	1926	1927 [1]
Year	**568,667**	**415,922**	**422,268**	**564,565**	**483,687**	**520,053**	**573,367**	**519,804**
January	49,748	41,148	38,930	51,944	52,507	51,640	53,205	56,882
February	41,055	31,524	42,425	43,645	47,302	38,770	46,180	52,904
March	47,850	31,054	51,936	48,446	41,288	37,416	45,744	60,147
April	38,764	28,154	16,335	44,057	30,429	33,514	39,738	34,674
May	39,841	34,057	21,005	47,690	32,276	35,276	38,737	35,395
June	46,095	34,635	23,096	47,083	31,458	36,960	41,625	36,627
July	45,988	31,047	17,602	46,707	33,346	39,362	43,102	33,637
August	49,974	35,291	26,755	50,578	35,923	44,633	45,957	41,705
September	50,241	35,870	42,463	47,841	42,376	46,556	48,559	41,928
October	53,278	44,687	46,733	50,907	48,414	52,907	54,127	44,000
November	52,576	36,805	46,900	44,425	42,102	50,497	59,213	40,628
December	53,257	31,650	48,088	41,242	46,266	52,522	57,180	41,277
	Anthracite (Pennsylvania)							
Year	**89,598**	**90,473**	**54,683**	**93,339**	**87,927**	**61,817**	**84,437**	**80,652**
January	7,459	7,681	6,566	8,521	7,724	7,234	[2] 172	6,561
February	6,415	7,983	7,096	7,602	7,428	7,003	[2] 2,069	5,852
March	7,935	7,677	9,181	9,175	7,908	6,886	8,732	6,098
April	6,285	7,985	[3] 27	7,885	6,639	7,292	8,163	7,127
May	8,037	7,752	[3] 36	8,384	7,549	7,938	8,001	8,002
June	8,251	8,071	[3] 86	8,474	7,509	7,616	8,878	7,257
July	8,342	7,309	[3] 118	8,136	7,584	8,334	8,371	5,028
August	8,105	7,459	[3] 164	8,672	6,906	9,014	8,171	7,747
September	4,691	7,385	[3] 5,075	[4] 2,853	7,408	[2] 52	8,388	6,642
October	8,148	7,858	8,896	8,532	7,479	[2] 69	8,617	7,404
November	7,527	7,110	8,695	7,575	6,604	[2] 153	7,397	6,902
December	8,403	6,203	8,743	7,530	7,189	[2] 226	7,478	6,032

[1] Preliminary; subject to revision.
[2] Strike, Sept. 1, 1925, to Feb. 16, 1926.
[3] Strike, Apr. 1 to Sept. 11, 1922.
[4] Strike for 3 weeks in September, 1923.

Source: Bureau of Mines, Department of Commerce.

With a continuance of the industrial activity which characterized the previous year and substantial export shipments on orders placed as a result of the British strike in 1926, production was heavy at the opening of 1927, the tonnage for January amounting to 56,882,000 net tons. The demand was stimulated by the desire of large consumers to fortify themselves with substantial stocks of coal in anticipation of a shutdown in the union fields at the expiration of the three-year wage agreement on March 31, with the result that the month of March recorded the largest production in the history of the bituminous industry, 60,147,000 tons. The failure of negotiations for a new wage agreement in the central competitive field closed many mines,

Chart I.—MONTHLY PRODUCTION OF BITUMINOUS AND ANTHRACITE COAL



stocks were drawn upon, and production in April dropped to 34,674,000 tons, declined still further to 33,637,000 in July, and ranged from 40,000,000 to 44,000,000 tons during the last five months of the year.

The failure of operators and miners of the central competitive field (Illinois, Indiana, Ohio, and western Pennsylvania) to set up a new wage agreement to succeed the three-year agreement which expired March 31 resulted in interruptions to production in that territory as well as in some of the outlying union districts which customarily base their wage agreements upon that of the central competitive field. Certain districts in the Western States continued under the old scale pending the making of a new general agreement, and central Pennsylvania continued that scale until July 1, when it began operating on a reduced wage scale. The States of Kansas, Oklahoma, Arkansas, Missouri, Iowa, and Illinois entered into new wage agreements with the miners in early October, as did the shaft

mines of Indiana. In Ohio and western Pennsylvania no union wage agreement was reestablished during the year, and a number of concerns began open-shop production in the latter territory.

Production of the 12 leading States, amounting to approximately 95 per cent of the bituminous coal output, is shown in Table 15. Despite the reduction in the total production of the country, a substantial gain was recorded in Wyoming, while Kentucky and West Virginia established new high records. For the first time in its history West Virginia assumed the lead as a producer of bituminous coal.

Table 15.—Production of Coal, by Principal States

[In thousands of short tons]

State	1911–1915	1916–1920	1921–1925	1923	1924	1925	1926	1927 [1]
Grand total	**529,189**	**626,386**	**558,947**	**657,904**	**571,613**	**581,870**	**657,804**	**600,456**
Anthracite (Pennsylvania)	**89,233**	**92,741**	**77,648**	**93,339**	**87,927**	**61,817**	**84,437**	**80,652**
Bituminous	**439,955**	**533,645**	**481,299**	**564,565**	**483,687**	**520,053**	**573,367**	**519,804**
Alabama	15,864	17,834	18,097	20,458	19,130	20,004	21,001	18,400
Colorado	9,433	11,595	10,049	10,346	10,444	10,311	10,637	9,693
Illinois	58,320	78,255	68,523	79,310	68,323	66,909	69,367	45,408
Indiana	16,060	25,515	21,677	26,229	21,480	21,225	23,186	17,699
Iowa	7,442	7,571	4,952	5,711	5,468	4,715	4,625	2,526
Kentucky	18,380	30,108	43,743	44,777	45,147	55,069	62,924	72,626
Ohio	28,553	40,609	31,590	40,546	30,473	28,034	27,872	14,668
Pennsylvania	157,229	168,532	133,721	171,880	130,634	136,928	153,042	131,007
Tennessee	6,288	6,208	5,078	6,040	4,557	5,454	5,789	5,256
Virginia	7,924	10,158	10,648	11,762	10,693	12,800	14,133	13,366
West Virginia	69,353	86,369	97,044	107,900	101,663	122,381	143,509	151,680
Wyoming	6,907	8,555	6,812	7,575	6,757	6,553	6,512	7,085
All other	38,205	42,338	29,366	32,031	28,918	29,670	30,770	30,390

[1] Preliminary.

Source: Bureau of Mines, Department of Commerce.

Table 16.—Percentage Distribution of Coal Production, by States

State	1911–1915	1921–1925	1926	1927 [1]	State	1911–1915	1921–1925	1926	1927 [1]
Grand total	**100.0**	**100.0**	**100.0**	**100.0**	**Bituminous—Con.**				
					Kentucky	3.5	7.8	9.6	12.1
Anthracite (Pa.)	**16.9**	**13.9**	**12.8**	**13.4**	Ohio	5.4	5.6	4.2	2.4
					Pennsylvania	29.7	23.9	23.3	21.8
Bituminous	**83.1**	**86.1**	**87.2**	**86.6**	Tennessee	1.2	.9	.9	.9
Alabama	3.0	3.2	3.2	3.1	Virginia	1.5	1.9	2.2	2.2
Colorado	1.8	1.8	1.6	1.6	West Virginia	13.1	17.4	21.8	25.3
Illinois	11.0	12.3	10.5	7.6	Wyoming	1.3	1.2	1.0	1.2
Indiana	3.0	3.9	3.5	2.9	All other	7.2	5.3	4.7	5.1
Iowa	1.4	.9	.7	.4					

[1] Based on preliminary figures.

Source: Bureau of Mines, Department of Commerce.

The percentage of bituminous coal mined by machine continues to show a steady increase each year. Advancing from 25 per cent in 1900 to over 50 per cent in 1913, the total reached 70.6 per cent in 1925 and moved up to 71.7 per cent during 1926. (Table 17.) The

number of days worked by the bituminous mines in 1926 amounted to 215, as compared with 195 days worked during 1925. This was the greatest number of days worked since 1920. While the average daily output per man of 4½ tons was approximately the same as in 1925, the greater number of days worked raised the average number of tons per man per year to 966 in 1926, as compared with 884 in the previous year. (Data for 1927 are not available.)

Reports of the Bureau of Mines show an increase in tonnage of bituminous coal loaded by machines of 86 per cent from 1923 to 1924, and from 1924 to 1925 an increase of 78 per cent. From 1925 to 1926 the increase was approximately 60 per cent, and the total loaded mechanically in 1926 was 1.8 per cent of the bituminous production of that year.

Table 17.—Coal: Men Employed, Days Worked, Average Production per Man, and Per Cent of Bituminous Coal Mined by Machine

Year	Anthracite				Bituminous				
	Men employed	Average days worked	Average tonnage per man		Men employed	Average days worked	Average tonnage per man		Per cent of coal mined by machine
			Per day worked	Per year			Per day worked	Per year	
1890	126,000	200	1.85	369	192,204	226	2.56	579	[1]
1895	142,917	196	2.07	406	239,962	194	2.90	563	[1]
1900	144,206	166	2.40	398	304,375	234	2.98	697	24.9
1905	165,406	215	2.18	470	460,629	211	3.24	684	32.8
1910	169,497	229	2.17	498	555,533	217	3.46	751	41.7
1911	172,585	246	2.13	524	549,775	211	3.50	738	43.9
1912	174,030	231	2.10	485	548,632	223	3.68	820	46.8
1913	175,745	257	2.02	520	571,882	232	3.61	837	50.7
1914	179,679	245	2.06	505	583,506	195	3.71	724	51.7
1915	176,552	230	2.19	504	557,456	203	3.91	794	55.0
1916	159,869	253	2.16	548	561,102	230	3.90	896	56.5
1917	154,174	285	[2] 2.27	[2] 646	603,143	243	3.77	915	55.5
1918	147,121	293	[2] 2.29	[2] 672	615,305	249	3.78	942	55.9
1919	154,571	266	2.14	570	621,998	195	3.84	749	59.2
1920	145,074	271	[2] 2.28	[2] 618	639,547	220	4.00	881	59.8
1921	159,499	271	2.09	567	663,754	149	4.20	627	65.6
1922	156,849	151	2.31	349	687,958	142	4.28	609	63.2
1923	157,743	268	2.21	592	704,793	179	4.47	801	66.9
1924	160,009	274	2.00	550	619,604	171	4.56	781	69.5
1925	160,312	182	2.12	386	588,493	195	4.52	884	70.6
1926	165,386	244	2.09	511	593,647	215	4.50	966	71.7

[1] Data not available. [2] Heavy washery output.

Source: Bureau of Mines, Department of Commerce.

Anthracite Coal.

Continuing operations under the five-year wage agreement established in 1926, production in the anthracite industry was fairly steady throughout 1927. Preliminary production figures for the year show a total of 80,652,000 net tons, compared with 84,437,000 net tons produced in 1926, a decrease of 4½ per cent. The average annual production for previous postwar years, two of them seriously affected by prolonged strikes, was 81,296,000 tons.

COMMERCIAL STOCKS OF BITUMINOUS COAL

At the beginning of 1927 commercial stocks of bituminous coal amounted to 55,000,000 net tons. Anticipating a stoppage of production in the union fields upon the expiration of the existing wage agreement on March 31, consumers accumulated large stocks between January 1 and April 1, and on the latter date commercial stocks were the largest ever recorded, amounting to 75,000,000 net tons. (Table 18.) During the following quarter stocks were freely drawn upon, and the total on July 1 had declined to 63,400,000 tons. During the last half of the year the growing confidence of consumers in the ability of the industry to meet current requirements contributed to a further decrease in stocks, and the total on January 1, 1928, declined to 55,500,000 tons, about the same quantity on hand as a year earlier.

Table 18.—Estimated Total Commercial Stocks of Bituminous Coal [1]

[In thousands of short tons]

Year	Month	Stocks	Year	Month	Stocks	Year	Month	Stocks
1916	Oct. 1	27,000	1922	Nov. 1	32,000	1926	Apr. 1	40,000
1917	do	28,100	1923	Mar. 1	36,000	1926	May 1	36,000
1918	July 15	39,700	1923	June 1	42,000	1926	July 1	39,000
1918	Nov. 11	63,000	1923	Sept. 1	56,000	1926	Aug. 1	41,000
1919	Apr. 1	40,400	1924	Jan. 1	62,000	1926	Oct. 1	43,000
1920	Mar. 1	24,000	1924	June 1	51,000	1927	Jan. 1	55,000
1920	June 1	20,000	1924	Sept. 1	47,000	1927	Apr. 1	75,000
1921	Jan. 1	45,800	1925	Mar. 1	44,000	1927	July 1	63,400
1921	Aug. 1	41,000	1925	June 1	38,000	1927	Aug. 1	60,100
1921	Nov. 1	48,500	1925	Sept. 1	43,000	1927	Oct. 1	61,900
1922	Jan. 1	48,000	1925	Nov. 1	48,000	1927	Nov. 1	[3] 61,300
1922	Apr. 1	[2] 63,000	1926	Jan. 1	49,000	1928	Jan. 1	[3] 55,500
1922	Sept. 1	22,000	1926	Feb. 1	45,000			

[1] The figures for 1918 are based upon actual count. Beginning Apr. 1, 1919, they are estimates based upon reports from a selected list of consumers whose stocks in 1918 bore a known relation to the known total stocks. Data exclude coal in transit and on the upper lake docks.

[2] No canvass made on this date. Figure is minimum estimate calculated from total stocks on Mar. 1, which were 52,500,000 tons.

[3] Subject to revision.

Source: Joint Report of Bureau of Mines and Bureau of the Census, Department of Commerce.

COAL CONSUMPTION

No estimate of the apportionment of coal among major consuming groups has been made since that for 1923, printed on page 257 of the Commerce Yearbook for 1925.

The average weekly rate of United States consumption and exports of bituminous coal from 1918 to the end of 1927 is shown in Table 19. The periods covered by the table coincide with those covered by stock surveys, so that variations in stocks may be taken into account in estimating consumption. The decrease in consumption and exports in the last half of 1927, as compared with the corresponding period of 1926, is particularly noticeable.

Table 19.—Average Weekly United States Consumption and Exports of Bituminous Coal

[In thousands of short tons]

Period	Net United States consumption [1]	Exports	Total consumption and exports
1918, Nov. 11 to Dec. 31	10,600	344	10,944
1921, Nov. 1 to Dec. 31	8,400	238	8,638
1922, Nov. 1 to Dec. 31	9,960	397	10,357
1923, January	[2] 11,370	276	11,646
1923, February	[2] 11,550	226	11,776
1923, Oct. 1 to Dec. 31	10,080	326	10,406
1925, Nov. 1 to Dec. 31	[2] 11,680	369	12,049
1926, January	[2] 12,700	251	12,951
1926, May 1 to July 1	8,030	470	8,500
1926, Aug. 1 to Oct. 1	9,440	936	10,376
1926, Oct. 1 to Dec. 31	11,200	1,116	12,316
1927, Jan. 1 to Mar. 31	11,430	387	11,817
1927, Apr. 1 to June 30	8,889	370	9,259
1927, July 1 to Sept. 30	8,360	351	8,711
1927, Oct. 1 to Dec. 31	9,912	273	10,185

[1] Production plus imports and minus exports, plus or minus changes in stocks. Allowance is made for stocks at the mines; coal in transit including unbilled loads, coal in cars en route to destination, and coal on the lake docks: and stocks of commercial consumers.
[2] Bituminous coal required to meet shortage of anthracite.
Source: Bureau of Mines, Department of Commerce.

DISTRIBUTION OF BITUMINOUS COAL

Although data showing the general distribution of bituminous coal to consuming areas are not available later than 1918, some of the larger movements are indicated in Tables 20 and 21. Shipments via the Great Lakes in 1927 reached a new high record, the total of cargo coal and vessel fuel dumped at Lake Erie ports amounting to 34,302,000 net tons. This represents an increase of 15 per cent over the tonnage of 1926. Of the 32,852,000 tons of cargo coal shipped via the Lakes, 84 per cent went to United States destinations and 16 per cent to Canada.

Table 20.—Bituminous Coal Dumped into Vessels at Lake Erie Ports

[Quantities in thousands of short tons]

Destination	Quantity							Per cent	
	1921	1922	1923	1924	1925	1926	1927	1926	1927
Total dumped	23,171	19,351	31,457	24,323	27,863	29,744	34,302		
Cargo coal [1]	22,412	18,522	29,829	22,975	26,331	28,159	32,852	100.00	100.00
Vessel fuel	759	829	1,629	1,348	1,532	1,585	1,451		
United States	17,632	14,826	24,172	18,223	22,125	23,232	27,586	82.7	83.8
Lake Superior ports	9,908	6,700	13,808	9,539	10,842	11,215	13,726	39.9	41.7
Lake Michigan ports	6,173	5,486	8,088	6,551	8,203	9,085	10,158	32.3	30.9
All other ports	1,551	2,640	2,276	2,133	3,080	2,932	3,702	10.5	11.2
Canada	4,780	3,696	5,475	4,901	4,178	4,861	5,316	17.3	16.2
Lake Superior ports	2,006	1,902	2,292	2,014	807	1,106	1,461	3.9	4.4
All other ports	2,774	1,794	3,183	2,887	3,371	3,755	3,855	13.4	11.8

[1] Disparity between total cargo coal and sum of quantities shown for the several destinations is due to the fact that close of navigation prevents certain vessels from reaching destination during the same year.
Source: Ore and Coal Exchange.

Shipments of bituminous coal from Atlantic ports declined greatly as compared with 1926, when the British strike was responsible for large exports. (Table 21.) The total shipments amounted to 37,839,000 net tons, or approximately 20,000,000 tons less than in 1926. The greatest decline was in export tonnage, which was about 18,000,000 tons below the record of 1926. Bunker coal also showed a decline. On the other hand, shipments to New England gained about 2,000,000 tons over the previous year. As usual, Hampton Roads shipped the largest tonnage, while New York resumed its former standing as the second largest shipper of bituminous coal on the Atlantic coast, a position held by Baltimore in 1926.

Table 21.—Bituminous Coal Shipments from Atlantic Ports

[In thousands of short tons]

Port	1919	1920	1921	1922	1923	1924	1925	1926	1927
Total	37,062	53,784	37,323	28,473	37,521	33,217	37,124	57,575	37,839
Shipped from:									
New York	14,234	14,825	11,912	7,440	10,800	9,005	9,230	10,337	9,031
Philadelphia	4,411	6,191	3,641	2,158	3,893	2,877	3,108	5,447	3,232
Baltimore	3,467	7,831	4,136	1,917	5,068	3,063	3,430	10,353	3,463
Hampton Roads	14,630	24,026	17,242	16,626	17,384	18,094	21,113	30,716	21,792
Charleston	320	911	392	332	376	178	242	722	321
Destination:									
Coastwise to New England	8,386	10,456	8,859	10,892	13,374	11,488	13,463	12,949	14,829
Exports	8,292	21,778	9,633	1,613	5,122	4,768	5,109	21,900	3,580
Bunker	6,874	9,171	8,135	4,576	5,442	4,961	5,488	8,545	5,709
Inside capes	3,438	3,410	3,251	3,332	4,460	3,753	4,348	4,373	4,201
Other tonnage	10,072	8,968	7,445	8,059	9,123	8,246	8,715	9,808	9,520

Source: Bureau of Mines, Department of Commerce.

PRICE MOVEMENT

The average spot price of bituminous coal f. o. b. the mines was $1.99 in 1927, a decrease of 22 cents from 1926, and the lowest annual average since 1916. (Table 22.) In general, small increases over 1926 were registered in the average price of mine-run coal in the union fields which suspended mining on April 1, while average prices declined in the important nonunion fields. A notable exception occurred in western Kentucky, where the average price of mine run increased over 1926, in line with the trend in the competing fields of Indiana and Illinois. For the country as a whole the average spot price of bituminous coal (Chart II and Table 23) declined steadily from the high figure of $2.34 in January to the low of $1.85 in June, recovered gradually to $2.07 in September, and again receded to $1.90 in December. Compared with 1926, the monthly average prices were higher during the first quarter, practically the same for April, and lower each month thereafter except in August.

Table 22.—Annual Average Spot Prices of Mine-Run Coal f. o. b. Mines

NOTE.—General average represents weighted average price for 14 coals, representative of nearly 90 per cent of the bituminous output of the United States. See also footnotes to Table 24.

[Per short ton of 2,000 pounds]

Year	General average	Somerset, Pa.	Pittsburgh, Pa.	Southern West Virginia smokeless	Southeastern Kentucky	Western Kentucky	Indiana fourth and fifth vein	Southern Illinois	Hocking, Ohio
1913	$1.23	$1.35	$1.27	$1.34	$1.59	$1.00	$1.18	$1.14	$1.22
1914	1.14	1.26	1.17	1.23	1.37	.90	1.12	1.11	1.12
1915	1.12	1.31	1.04	1.22	1.34	.92	1.08	1.09	1.10
1916	1.85	2.31	2.07	2.13	1.98	1.33	1.56	1.52	1.88
1917	3.25	3.88	3.58	3.80	3.39	2.38	2.77	2.68	3.30
1918	2.58	2.92	2.40	2.50	2.98	2.40	2.40	2.43	2.54
1919	2.59	3.08	2.11	2.93	2.80	2.30	2.45	2.42	2.29
1920	5.64	6.76	5.72	7.23	6.21	4.22	3.98	4.18	4.67
1921	2.55	2.50	2.25	2.43	2.47	2.24	2.63	3.00	2.17
1922	3.64	3.50	2.78	3.52	3.45	3.25	3.33	3.55	3.24
1923	2.77	3.01	2.27	3.51	2.27	1.92	2.57	3.07	2.11
1924	2.08	2.15	1.93	1.98	1.59	1.61	2.27	2.38	1.69
1925	2.06	2.05	1.98	2.06	1.58	1.34	2.18	2.39	1.59
1926	2.21	2.26	2.06	2.46	1.83	1.36	2.15	2.47	1.75
1927	1.99	1.95	2.06	2.02	1.60	1.61	2.24	2.53	1.80

Sources: For 1913–1918 from report on "Prices of Coal and Coke, 1913–1918," published by Geological Survey and the War Industries Board; 1919–1927 from Coal Age.

Chart II.—MONTHLY AVERAGE MINE PRICE OF BITUMINOUS COAL

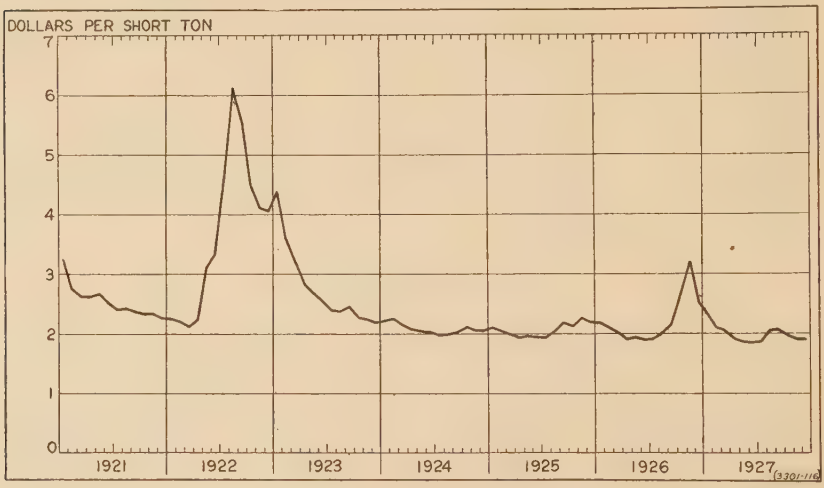


Table 23.—General Weighted Average of Spot Prices of Bituminous Coal f. o. b. Mines, by Months

[Per short ton of 2,000 pounds]

Month	1920	1921	1922	1923	1924	1925	1926	1927
January	$2.57	$3.26	$2.25	$4.38	$2.21	$2.10	$2.18	$2.34
February	2.58	2.77	2.20	3.59	2.25	2.04	2.09	2.11
March	2.58	2.63	2.12	3.20	2.15	1.99	2.01	2.06
April	3.85	2.62	2.24	2.84	2.07	1.95	1.92	1.93
May	4.59	2.68	3.11	2.68	2.04	1.97	1.93	1.87
June	7.18	2.52	3.32	2.56	2.03	1.95	1.90	1.85
July	8.24	2.40	4.67	2.40	1.98	1.93	1.91	1.87
August	9.51	2.42	6.13	2.39	1.99	2.04	2.00	2.06
September	8.52	2.37	5.08	2.46	2.02	2.18	2.15	2.07
October	7.78	2.33	4.48	2.28	2.10	2.13	2.70	1.96
November	5.87	2.35	4.11	2.25	2.06	2.26	3.19	1.90
December	4.38	2.26	4.05	2.18	2.06	2.19	2.53	1.90

Source: Coal Age.

The same trend prevailed throughout 1927 in most of the important producing fields, in that prices were better than those of 1926 in the early part of the year and steadily declined to end the year at levels much below those of 1926. (Table 24.) Changes in supply and demand, previously discussed, logically accounted for the price trends in 1927.

Table 24.—Monthly Average Spot Prices of Mine-Run Coal f. o. b. Mines, by Fields

[Per short ton of 2,000 pounds]

Month	Somerset, Pa.[1]		Pittsburgh, Pa.[2]		Southern West Virginia smokeless[3]		Southeastern Kentucky[4]		Western Kentucky[5]		Indiana fourth and fifth vein[6]		Southern Illinois[6]	
	1926	1927	1926	1927	1926	1927	1926	1927	1926	1927	1926	1927	1926	1927
January	$2.12	$2.54	$2.05	$2.06	$2.37	$2.54	$1.67	$1.79	$1.44	$1.67	$2.14	$2.25	$2.50	$2.63
February	2.19	2.09	2.05	1.87	2.29	2.34	1.61	1.65	1.42	1.68	2.14	2.29	2.47	2.63
March	2.10	1.96	2.01	1.90	1.98	1.97	1.50	1.59	1.29	1.63	2.10	2.32	2.43	2.63
April	1.97	1.94	1.95	2.20	1.80	2.02	1.56	1.62	1.21	1.64	2.08	2.32	2.43	2.63
May	1.97	1.87	1.83	2.21	1.92	2.03	1.56	1.57	1.19	1.49	2.08	2.16	2.43	[7]
June	1.92	1.86	1.77	2.02	1.93	2.00	1.54	1.57	1.17	1.44	2.08	2.13	2.25	[7]
July	1.95	1.84	1.75	2.03	1.95	1.94	1.57	1.51	1.19	1.65	2.08	2.13	2.38	[7]
August	1.95	1.85	1.81	2.04	2.27	2.02	1.65	1.62	1.19	2.43	2.13	2.34	2.43	[7]
September	1.99	1.83	2.00	1.96	2.62	1.95	1.74	1.59	1.21	1.90	2.13	2.55	2.43	[7]
October	2.90	1.80	2.61	1.85	3.42	1.84	2.28	1.58	1.28	1.42	2.13	2.26	2.43	2.43
November	3.22	1.83	2.78	1.83	4.18	1.76	3.12	1.54	1.99	1.15	2.41	2.02	2.77	2.38
December	2.82	1.88	2.15	1.83	2.99	1.83	2.14	1.53	1.72	1.16	2.36	2.15	2.75	2.38

[1] Boston market.
[2] Pittsburgh market.
[3] Average of quotations on Boston, Chicago, Cincinnati, and Columbus markets.
[4] Average of quotations on Louisville, Cincinnati, and Chicago markets.
[5] Average of quotations on Louisville and Chicago markets.
[6] Chicago market.
[7] Quotations withdrawn because of strike.

Source: Coal Age.

Table 25.—Wholesale Prices of Coal at Central Markets

[Prices per short ton except as indicated]

Grade and market	1913	1918	1921	1922	1923	1924	1925	1926	1927
Anthracite, egg, New York (long ton)	$5.06	$6.51	$10.22	$10.41	$10.87	$11.35	[1] $11.11	[2] $11.48	$10.96
Bituminous:									
Southern Illinois, prepared sizes, Chicago	-------	4.01	6.02	6.59	6.13	4.79	4.75	4.66	4.83
Kanawha, run of mine, f. o. b., Cincinnati	2.20	3.88	4.56	5.20	4.31	3.43	3.40	3.62	3.63
New River, mine run, f. o. b., Cincinnati	2.41	4.10	5.51	5.62	5.72	4.14	4.12	4.42	4.31
Pocahontas, mine run, f. o. b., Norfolk (long ton)	3.00	4.48	6.35	6.32	5.83	4.45	4.64	5.38	4.35
Pittsburgh, prepared sizes	-------	3.36	3.80	5.16	4.60	4.15	3.98	3.81	3.66

[1] No quotations during strike, Sept. 1, 1925, to Feb. 16, 1926.
[2] Average for 11 months.

Source: Bureau of Labor Statistics, Department of Labor.

In the wholesale markets the average sales realization of anthracite egg per long ton at New York tidewater was $10.96, a decline of 52 cents from 1926 and the lowest figure since 1923. Average wholesale

prices of anthracite and bituminous coal for various grades and markets are shown in Table 25. Since these are prices for local markets they include transportation costs and are, therefore, higher than those shown in other tables for coal f. o. b. cars at the mines.

The average retail prices of coal as of January and July of each year since 1913 are shown in Table 26. In 1927 the retail price of both anthracite and bituminous coal declined from January to July, while in January, 1928, both showed advances over July, 1927, but were lower than in January of most recent years.

Table 26.—Retail Prices of Coal in Ton Lots

NOTE.—Anthracite prices represent average for 28 cities, bituminous for 38 cities.

[Per short ton]

Year	Anthracite (chestnut)		Bituminous		Year	Anthracite (chestnut)		Bituminous	
	Jan.	July	Jan.	July		Jan.	July	Jan.	July
1913	$8.15	$7.68	$5.48	$5.39	1921	$16.13	$14.95	$11.82	$10.47
1914	8.00	7.78	5.97	5.46	1922	15.02	14.92	9.89	9.49
1915	7.99	7.73	5.71	5.44	1923	15.46	15.05	11.18	10.04
1916	8.13	8.28	5.69	5.52	1924	15.76	15.10	9.75	8.94
1917	9.40	9.16	6.96	7.21	1925	15.37	14.93	9.24	8.61
1918	10.03	10.07	7.68	7.92	1926	(1)	15.19	9.74	8.70
1919	11.61	12.17	7.90	8.10	1927	15.42	14.81	9.96	8.91
1920	12.77	14.33	8.81	10.55	1928	15.08		9.30	

[1] Not available; insufficient data due to coal strike.

Source: Bureau of Labor Statistics, Department of Labor.

FOREIGN TRADE

Exports of bituminous coal in 1927 amounted to 16,082,000 long tons, a decrease of 49 per cent from the 1926 total. These exports amounted to about 3 per cent of the total production of bituminous coal as compared with 5½ per cent in the preceding year. While the bituminous exports of 1927 naturally receded greatly from the high figure of 1926, when export demand was abnormally stimulated by reason of a prolonged stoppage of British production, they amounted to somewhat more than the exports of 1924 and 1925. Exports of bituminous coal to Canada amounted to 13,031,000 long tons, exceeding the 1926 shipments to that country by more than 7 per cent. Overseas shipments declined from 19,229,000 tons in 1926 to 2,977,000 tons in 1927, and exports to practically every oversea destination except Cuba showed substantial decreases.

Exports of anthracite coal declined from 3,598,000 long tons in 1926 to 2,969,000 tons in 1927, a decrease of approximately 17 per cent. Canada remained the leading market, receiving 97 per cent of the total anthracite exports.

Table 27.—Exports of Bituminous Coal, by Destination [1]

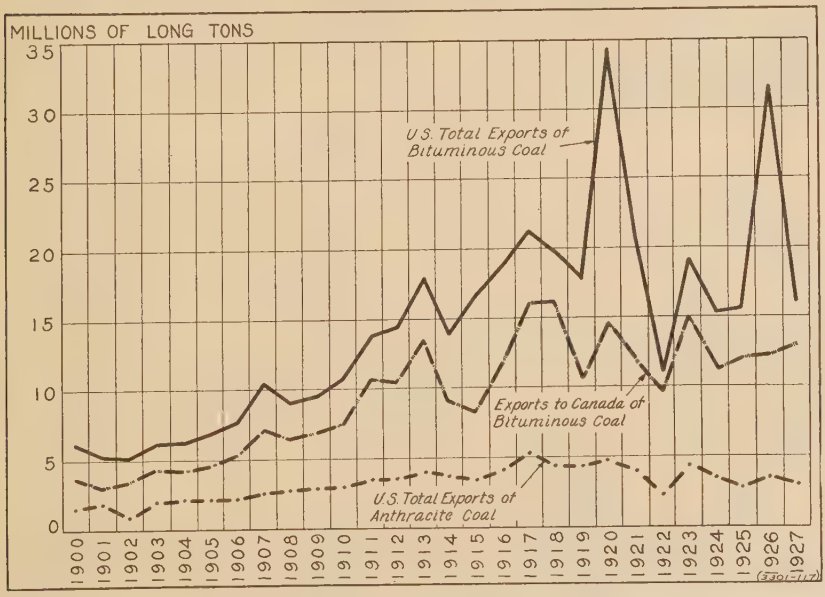
[In thousands of long tons]

Country	1913 [2]	1919	1920	1921	1922	1923	1924	1925	1926	1927 [3]
Grand total	16,083	17,959	34,390	20,653	11,083	19,155	15,268	15,591	31,493	16,082
France	16	523	3,646	608	12	843	421	234	486	107
Italy	332	1,633	2,388	1,549	124	585	871	778	1,542	321
Netherlands	(4)	722	2,147	334	3	379			28	
Other Europe	127	1,215	4,980	[5] 2,433	14	585	65	25	[6] 12,055	280
Mexico and Central America	994	193	391	418	207	123	329	432	524	479
Cuba	1,274	971	1,333	524	464	611	535	620	550	568
Other West Indies	593	288	372	207	180	271	363	412	563	460
Argentina	39	483	1,718	753	79	131	196	147	996	211
Brazil	234	634	965	527	152	311	759	587	1,191	375
Chile	112	94	494	151	47	20	55	24	3	4
Other South America	56	276	348	140	29	61	107	60	247	73
Other overseas	298	252	1,092	1,043	95	145	175	180	1,044	99
Total overseas	4,075	7,285	19,874	8,688	1,406	4,065	3,876	3,499	19,229	2,977
Canada	11,981	10,669	14,491	11,961	9,675	15,048	11,299	11,983	12,173	13,031
Other northern North America	27	4	25	5	2	42	93	109	91	75

[1] Does not include fuel or bunker coal laden on vessels engaged in the foreign trade.
[2] Fiscal year ended June 30.
[3] Preliminary.
[4] Less than 500 tons.
[5] To United Kingdom, 1,497,000 tons.
[6] To United Kingdom, 10,757,000 tons.

Source: Bureau of Foreign and Domestic Commerce.

Chart III.—EXPORTS OF BITUMINOUS AND ANTHRACITE COAL



Imports of anthracite and bituminous coal combined amounted to 597,000 long tons, a decrease of 604,000 tons, or about 50 per cent, from the preceding year. Of the total imports, anthracite constituted 18 per cent and bituminous coal 82 per cent. As in earlier years, most of the bituminous came from Canada and most of the anthracite from Great Britain.

Table 28.—Coal Exports and Imports

[Quantities in thousands of long tons, and values in thousands of dollars]

Calendar year	Total exports		Anthracite exports		Bituminous exports [1]				Total imports [2]	
					Quantity					
	Quantity	Value	Quantity	Value	Total	To Canada	Per cent to Canada	Total value	Quantity	Value
1890	2,075	7,278	794	3,273	1,281	(3)	(3)	4,005	835	2,869
1895	3,683	10,754	1,471	5,937	2,212	(3)	(3)	4,817	1,354	3,955
1900	7,918	21,524	1,655	7,092	6,263	(3)	(3)	14,432	1,909	5,020
1905	9,189	28,973	2,230	11,105	6,959	4,777	68.6	17,868	1,645	4,011
1910	13,806	41,471	3,022	14,785	10,784	7,567	70.2	26,685	1,994	4,803
1911	17,433	52,593	3,554	18,093	13,879	10,610	76.4	34,500	1,241	3,623
1912	18,149	56,243	3,689	19,425	14,460	10,433	72.2	36,818	1,610	4,518
1913	22,141	67,410	4,154	21,960	17,987	13,496	75.0	45,450	1,415	3,863
1914	17,632	54,316	3,830	20,211	13,802	9,171	66.4	34,105	1,395	3,928
1915	20,305	61,246	3,540	18,429	16,765	8,354	49.8	42,817	1,524	4,413
1916	23,143	68,298	4,166	22,470	18,977	11,839	62.4	45,828	1,536	4,734
1917	26,649	110,413	5,364	30,910	21,285	16,178	76.0	79,503	1,304	4,842
1918	24,392	107,881	4,436	29,216	19,956	16,191	81.1	78,665	1,334	6,898
1919	22,402	120,377	4,443	36,668	17,959	10,669	59.4	83,709	977	5,473
1920	39,215	349,811	4,825	45,538	34,390	14,491	42.1	304,273	1,140	6,992
1921	24,829	168,222	4,176	45,625	20,653	11,961	57.9	122,597	1,131	7,457
1922	13,449	91,242	2,366	25,351	11,083	9,675	87.3	65,892	4,726	28,250
1923	23,700	154,124	4,545	49,577	19,155	15,048	78.6	104,547	1,949	12,249
1924	18,855	111,039	3,587	40,068	15,268	11,299	74.0	70,971	478	3,019
1925	18,429	100,163	2,838	31,761	15,591	11,983	76.9	68,403	879	5,846
1926	35,091	196,905	3,598	41,086	31,493	12,173	38.7	155,819	1,201	9,301
1927	19,051	104,257	2,969	32,928	16,082	13,031	81.0	71,329	597	3,284

[1] Does not include fuel or bunker coal laden on vessels engaged in the foreign trade.
[2] Imports to and including 1910 are imports for consumption.
[3] Not reported separately.

Source: Bureau of Foreign and Domestic Commerce.

WORLD PRODUCTION

Preliminary estimates of the Bureau of Mines place the world's total production of coal and lignite in 1927 at 1,475,000,000 metric tons, which is equivalent to 1,626,000,000 short tons, and the largest production yet recorded. Of this total the production of the United States amounted to approximately 37 per cent. While production in this country showed a material decrease from that of 1926, important gains were recorded in Great Britain, Germany, Poland, and Belgium. A table showing the production of coal in principal foreign countries will be published in Volume II of the Commerce Yearbook.

COKE

General Character of the Industry.

Coke is the solid residue from the destructive distillation of coal. It is produced by either burning the coal with restricted air supply or subjecting it to high temperatures in closed retorts with no air admission. The wasteful method of burning the coal in pits was supplanted by the introduction of ovens shaped like beehives, which increased in number and output from 1880 to 1910. The first by-product oven was erected in the United States in 1893. This type of oven has become of the greatest importance because it saves all the valuable gaseous and liquid constituents of the coal in addition

to yielding a higher percentage of coke than the beehive oven. The use of the by-product oven was quite limited prior to 1910, but it has now become the prevailing method of producing coke, as is indicated by Table 29.

In the by-product coke industry distinction is made between plants which act as independent merchant producers and those which are affiliated with city gas works, the iron and steel industry, or other industries. Most of the beehive ovens are located near the mines in the States which produce coking coals (especially Pennsylvania, West Virginia, and Virginia), while the by-product ovens are located in the iron and steel regions or near large cities where there is an outlet for both gas and coke. According to the purpose for which coke is used, it is classed as furnace, foundry, or domestic.

Production.

The total production of coke in 1927, according to a preliminary estimate of the Bureau of Mines, was 50,925,000 short tons, a decrease of 10 per cent from 1926. The decline in by-product coke production amounted to 1 per cent, while beehive coke declined 44 per cent. By-product coke represented 86 per cent of the total coke production in 1927, the highest proportion ever attained, as compared with 78 per cent of the total in 1926. In the production of by-product coke Pennsylvania continued the leading State, with an estimated output of 11,329,000 net tons, with Ohio, Indiana, and Alabama following in the order named. Pennsylvania also produced the largest quantity of beehive coke and, together with Ohio, produced about 78 per cent of the total.

Table 29.—Coke Production, Exports, and Imports

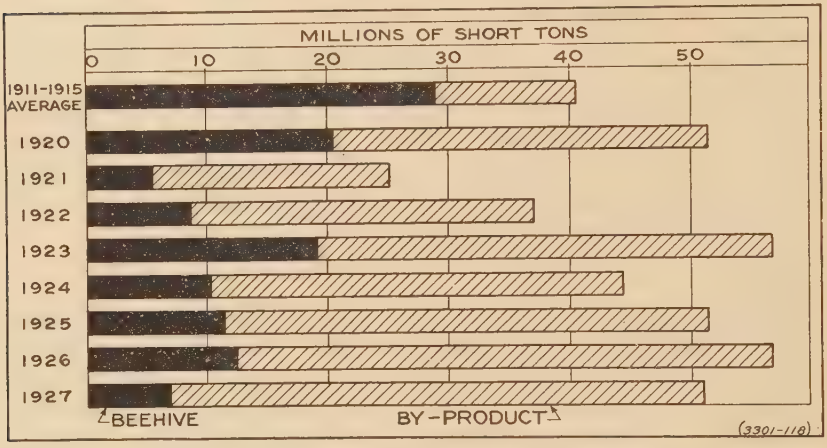
Year	Production (thousands of short tons)			By-product ovens, per cent of total	Value of product (thousands of dollars)	Exports		Imports[1]
	Total	Beehive ovens	By-product ovens			Total	To Canada [2]	
						Thousands of short tons		
1896–1900	16,265	15,741	524	3.2	30,293	265	108	54
1901–1905	25,673	23,566	2,107	8.2	58,581	519	244	150
1906–1910	36,848	31,296	5,552	15.1	91,068	904	549	159
1911–1915	40,394	29,000	11,394	28.2	103,739	897	662	98
1916–1920	52,429	27,733	24,696	47.1	320,799	1,182	789	34
1921–1925	42,985	11,026	31,959	74.4	251,967	734	568	99
1913	46,300	33,585	12,715	27.5	128,922	987	757	101
1920	51,345	20,511	30,834	60.1	494,246	920	594	41
1921	25,288	5,538	19,750	78.1	147,673	307	228	31
1922	37,124	8,573	28,551	76.9	238,313	512	411	94
1923	56,978	19,380	37,598	66.0	373,497	1,237	748	85
1924	44,270	10,286	33,984	76.8	237,792	659	549	83
1925	51,267	11,355	39,912	77.9	262,559	954	903	202
1926	56,866	12,489	44,377	78.0	307,773	987	933	285
1927 [3]	50,925	7,004	43,921	86.2	(4)	807	764	169

[1] Imports entered for consumption, except in 1925, 1926, and 1927, when they are total imports.
[2] Fiscal years 1896–1915; calendar years thereafter.
[3] Preliminary.
[4] Not yet available.

Source: Bureau of Mines, Department of Commerce.

The Census of Manufactures for 1925 showed that there was a considerable decline in the coke industry, as compared with 1923. The number of establishments was only 237, whereas it was 262

Chart IV.—PRODUCTION OF BEEHIVE AND BY-PRODUCT COKE



during the previous census year. The number of wage earners fell off 18 per cent, while wages declined almost 24 per cent. The cost of materials was 22 per cent less in 1925 and the value of products was 27 per cent lower.

Table 30.—The Coke Industry: Census Data

NOTE.—In 1925 gas-house coke to the amount of 4,032,187 short tons, including 2,398,391 short tons for sale valued at $20,721,381, was reported as made by establishments classified in the manufactured-gas industry, and not here included. Considerable quantities of gas-house coke were produced in other years.

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture	Coke produced (short tons)
1899	241	16,999	34,767	$7,085,736	$19,665,532	$35,585,445	$15,919,913	19,668,569
1909	315	29,273	61,717	15,454,345	64,024,527	95,696,622	31,672,095	39,315,065
1914	231	21,107	117,127	14,288,952	69,138,328	99,275,020	30,136,692	34,555,914
1919	278	29,319	224,879	42,299,292	224,266,674	316,515,838	92,249,164	43,110,644
1921 [1]	176	16,070	(2)	23,832,946	168,790,864	221,313,363	52,522,499	24,583,940
1923 [1]	262	28,364	332,560	48,107,894	354,030,441	516,922,898	162,892,457	56,017,325
1925 [1]	237	23,191	409,552	36,762,401	277,750,675	378,633,527	100,882,852	50,141,774

[1] The figures for 1921, 1923, and 1925 do not include data for establishments reporting products under $5,000 in value.
[2] Not called for in schedule or 1921.
Source: Bureau of the Census.

Prices.

The average prices of furnace and foundry coke in 1927, f. o. b. ovens at Connellsville, were $3.04 and $4.11 per short ton, respectively. Furnace-coke prices were about 22 per cent lower than in 1926, while foundry coke showed a decline of 17 per cent. Coke prices, more-

over, averaged lower than in any year since the war. The furnace-coke price declined from $3.50 in January to $2.75 in December, while the foundry-coke price declined from $4.50 in January, the high monthly average of the year, to $3.75 in December.

Table 31.—Coke Prices f. o. b. Connellsville per Short Ton Prompt Delivery

Period	Furnace	Foundry	Month	Furnace					Foundry				
				1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
1901–1905	[1] $2.30	(1)	January	$8.05	$3.94	$3.94	$7.19	$3.50	$8.70	$4.75	$4.88	$7.75	$4.50
1906–1910	[1] 2.24	(1)	February	7.13	4.08	3.63	7.31	3.38	8.25	4.88	4.31	8.31	4.31
1911–1915	1.98	$2.43	March	7.25	4.08	3.35	3.05	3.35	8.38	4.88	4.15	4.40	4.40
1916–1920 [2]	6.98	7.79	April	6.31	3.75	3.04	3.00	3.20	7.56	4.75	4.00	4.06	4.06
1921–1925	4.61	5.59	May	5.15	3.25	3.00	2.91	2.94	6.15	4.69	4.00	4.00	4.00
			June	4.75	3.19	2.77	2.83	2.93	5.56	4.38	3.80	4.00	4.00
1913	2.42	2.98											
1920	11.32	12.27	July	4.55	3.00	2.83	2.84	3.00	5.35	4.10	3.75	4.00	4.00
1921	3.45	4.63	August	4.56	3.00	3.06	2.95	3.00	5.38	4.00	3.88	4.00	4.00
1922	7.06	8.00	September	4.50	3.00	3.49	3.38	2.85	5.50	4.00	4.25	4.38	4.00
			October	3.85	3.00	6.13	3.63	2.85	4.80	4.00	6.31	4.63	4.00
1923	5.33	6.27	November	3.81	3.04	5.75	4.43	2.77	4.81	4.06	6.81	5.50	3.85
1924	3.42	4.42	December	4.00	3.68	4.32	3.50	2.75	4.81	4.55	5.20	4.50	3.75
1025	3.78	4.61											
1926	3.92	4.96											
1927	3.04	4.11											

[1] Figures for furnace coke from Bureau of Labor Statistics; foundry not reported.
[2] Government prices 1918.
Source: Iron Age.

Foreign Trade.

Exports of coke in 1927 amounted to 807,000 short tons, a decrease of 18 per cent from the preceding year. (Table 29.) Approximately 95 per cent of these exports went to Canada. Imports of coke were 169,000 short tons, or 41 per cent less than in 1926.

MANUFACTURED GAS

Census Statistics of the Industry.

The manufacture of gas for illuminating and heating differs from other industries in that the product can be transported only by means of pipes. It is, therefore, usually distributed within a comparatively limited radius, although high-pressure distribution is tending to expand the former limits. Gas is being to a greater and greater extent superseded by electricity for lighting, but there has been no decline in gas production because of its increased use for cooking, heating, and industrial purposes. To determine the exact output of the manufactured-gas industry is difficult on account of the interrelations between this industry and the natural-gas and coke industries. The Bureau of the Census classifies as engaged in the manufacture of gas only those establishments which make this their principal business.

Census figures for the manufactured-gas industry in 1925 show that there has been a steady decrease since 1909 in the number of establishments, but there have been marked increases in the horse-

power of prime movers, quantity of output, and all financial items. (Table 32.) In 1925 the value of all products of this industry was $455,460,000, of which the value of gas for sale represented 87 per cent, or $395,969,000. The value of by-products was in about the same proportion as in 1923. The apparent decline in the quantity of gas reported in 1921 as compared with 1919 is owing to a change in the classification of certain establishments which were no longer treated as engaged in this industry.

Table 32.—Manufactured Gas—Summary of Census Statistics

Item	1909	1914	1919	1921	1923	1925
Number of establishments	1,296	1,284	1,022	954	939	919
Wage earners (average number)	37,215	43,792	42,908	34,956	42,282	46,998
Primary horsepower	128,350	213,303	238,454	[1]	358,605	428,132
Wages (thousands of dollars)	20,931	26,802	52,759	53,306	59,600	67,436
Cost of materials (thousands of dollars)	52,428	76,779	157,551	202,253	191,120	178,423
Value of all products (thousands of dollars)	166,814	220,238	329,279	411,196	450,097	455,460
Value added by manufacture (thousands of dollars)	114,387	143,459	171,728	208,942	258,977	277,037
Quantity of material used:						
Bituminous coal (thousand short tons)	[2] 4,941	[2] 6,117	6,194	5,707	6,238	6,871
Anthracite (thousand long tons)			1,307	1,130	983	619
Oil (thousand gallons)	578,309	715,419	881,673	841,771	874,234	891,589
Principal products:						
Gas, for sale (million cubic feet)	150,836	203,639	308,440	306,058	356,554	359,402
Coke, for sale (thousand short tons)	1,641	2,282	2,458	2,031	2,175	2,398
Tar, for sale (thousand gallons)	78,340	125,939	120,528	113,766	108,867	125,274
Value of gas for sale (thousands of dollars)	138,615	175,066	282,289	372,032	394,506	395,969

[1] Not called for in schedule for 1921.

[2] Thousand short tons.

Source: Bureau of the Census.

Table 33.—Production, Purchase, and Sale of Gas by Companies Engaged in the Manufactured-Gas Industry

[In millions of cubic feet]

Year	Total gas produced and purchased	Produced	Purchased		Gas sold
			Coke-oven gas	Natural gas	
1919	322,300	271,300	[1] 51,000		300,000
1920	350,232	300,823	[1] 49,409		319,888
1921	360,392	295,162	37,393	27,837	326,950
1922	389,000	300,682	52,883	35,435	350,000
1923	418,000	313,718	65,872	38,410	384,722
1924	441,381	324,765	63,350	53,266	405,200
1925	457,100	324,400	76,600	56,100	421,400
1926	492,042	353,886	83,640	54,516	455,631

GAS SOLD, YEARS 1904–1918

Year	Amount	Year	Amount	Year	Amount
1904	113,930	1909	143,118	1914	198,839
1905	112,444	1910	149,431	1915	204,310
1906	122,850	1911	159,101	1916	231,381
1907	132,012	1912	178,229	1917	264,493
1908	138,570	1913	188,286	1918	271,593

[1] Includes all other processes not segregated.

Source: American Gas Association.

Production and Sales.

Statistics collected by the American Gas Association differ somewhat from those of the Bureau of the Census, chiefly because of the different method of classifying establishments. These figures show a steady increase in the quantity of gas sold each year since 1905. The quantity sold in 1926, 455,631,000,000 cubic feet, was 52 per cent greater than that sold in 1919, and an increase of 8 per cent over the sales in 1925. Companies engaged in the manufacture of gas also purchased large quantities of coke-oven and natural gas, which amounted to about 17 per cent and 11 per cent, respectively, of the total gas produced and purchased in 1926.

Although this business is not subject to sharp fluctuations in demand, the requirements for industrial purposes, representing probably one-fourth of the total output, vary considerably with changes in business activity.

Prices.

Prices of manufactured gas are not subject to the law of supply and demand, since they are usually fixed by the terms of franchise agreements or by regulations of the public authorities. The prices to different consumers, however, vary according to the quantities taken or the purpose for which the gas is used, lower rates being made for industrial and heating purposes than for light. The Bureau of Labor Statistics collects data on the net price of manufactured gas in large cities, on the basis of which a general weighted average is computed.

Table 34.—Net Prices of Manufactured Gas for Household Use in Specified Cities

NOTE.—Prices based on a family consumption of 3,000 cubic feet per month.

[Per 1,000 cubic feet]

Date	Price	Date	Price	Date	Price
AVERAGE, ALL CITIES SPECIFIED		AVERAGE, ALL CITIES SPECIFIED—contd.		AVERAGE, ALL CITIES SPECIFIED—contd.	
Apr. 15, 1913	$0.95	Apr. 15, 1920	$1.09	Dec. 15, 1925	$1.23
Apr. 15, 1914	.94	May 15, 1921	1.32	June 15, 1926	1.23
Apr. 15, 1915	.93	Mar. 15, 1922	1.29	Dec. 15, 1926	1.22
Apr. 15, 1916	.92	Mar. 15, 1923	1.25	June 15, 1927	1.22
Apr. 15, 1917	.91	June 15, 1924	1.24	Dec. 15, 1927	1.22
Apr. 15, 1918	.95	Dec. 15, 1924	1.24		
Apr. 15, 1919	1.04	June 15, 1925	1.23		

PRICES AS OF DECEMBER 15, 1927

City	Price	City	Price	City	Price
Atlanta	$1.55	Manchester	$1.38	Portland, Oreg.	$1.17
Baltimore	.85	Memphis	1.20	Providence	1.13
Birmingham	.80	Milwaukee	.82	Richmond	1.29
Boston	1.18	Minneapolis	.94	Rochester	1.00
Bridgeport	1.45	Mobile	1.76	St. Louis	1.00
Butte	2.10	Newark	1.20	St. Paul	.90
Charleston	1.55	New Haven	1.13	Salt Lake City	1.52
Chicago	1.02	New Orleans	1.30	San Francisco	.95
Cleveland	1.25	New York	1.24	Savannah	1.45
Denver	.90	Norfolk	1.33	Scranton	1.40
Detroit	.79	Omaha	1.00	Seattle	1.45
Fall River	1.15	Peoria	1.20	Springfield, Ill.	1.25
Indianapolis	.95	Philadelphia	1.00	Washington, D. C.	1.00
Jacksonville	1.92	Portland, Me.	1.42		

Source: Bureau of Labor Statistics, Department of Labor.

The average price of gas for household use declined gradually from 1921 to the end of 1926, since which time it has remained at the same level, or 8 per cent under the price of May 15, 1921. As compared with 1913, the price level of 1927 was 28 per cent higher. The average price for all cities, December 15, 1927, was $1.22, the same as for June 15, 1927, and December 15, 1926. For individual cities the prices in December varied from 79 cents in Detroit and 80 cents in Birmingham to $2.10 in Butte. For a majority of the cities the prices ranged between $1 and $1.50 per thousand cubic feet.

PETROLEUM AND REFINED PRODUCTS

SUMMARY.—In the petroleum industry the year 1927 was marked by depressed prices and, as would naturally follow, relatively low earnings. The production of crude petroleum at a rate in excess of current demand, which began late in 1926, continued throughout 1927, and stocks increased 61,202,000 barrels as compared with a decrease of 29,347,000 barrels in 1926. Production of crude increased 130,000,000 barrels, while domestic consumption of all oils, crude petroleum, natural gas, gasoline, and benzol showed an increase of approximately 22,000,000 barrels over 1926 and exports were about 1,000,000 barrels higher.

The world production of crude petroleum was in the neighborhood of 1,252,000,000, barrels, of which the United States produced approximately 904,000,000 barrels, or over 70 per cent. The continued decline in Mexican output and the growth in production of Venezuela and Colombia are significant developments.

A substantial increase in refinery output was recorded in 1927. This resulted mainly from increased demand for refined products, but was also influenced by the low price of the raw material—crude petroleum. The statistical position of gasoline was strong throughout the year, with production and consumption reaching new high levels and stocks being drawn on extensively. The percentage recovery of gasoline showed a further increase in spite of the fact that cracking activity was relatively below that of 1926.

Table 35.—Petroleum Summary

[Quantities in thousands of barrels of 42 gallons]

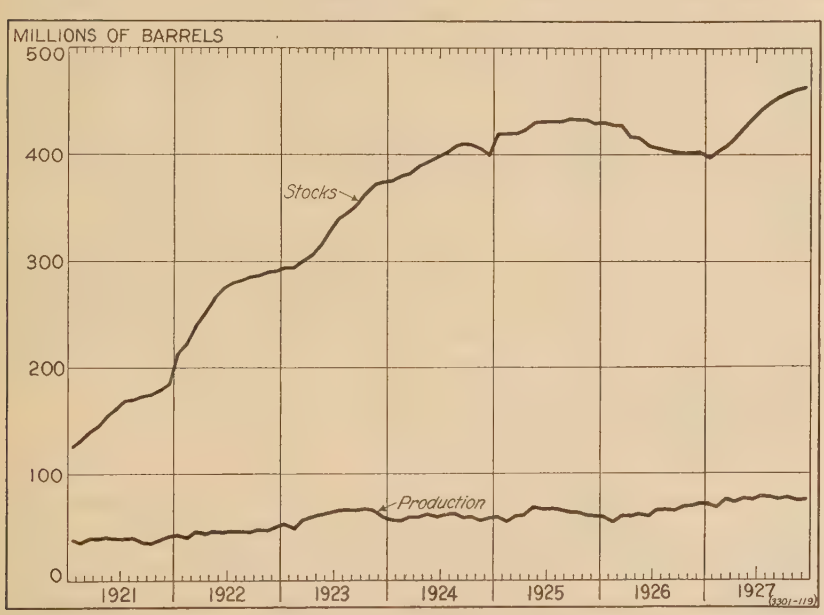
Item	1914	1922	1923	1924	1925	1926	1927 [1]	Per cent change, 1927 from 1926
Crude oil:								
Production in the United States	265,763	557,531	732,407	713,940	763,743	770,874	[2]894,435	[3] +17.2
Per cent of world total	65.2	64.9	71.9	70.4	71.5	70.2	[3] 72.2	
Imports	16,913	127,308	82,015	77,775	61,824	60,382	58,383	−3.3
Production:[4]								
Gasoline, naphtha, etc	34,763	147,672	179,903	213,326	259,601	299,734	330,667	+10.3
Kerosene	46,078	54,913	55,927	60,026	59,689	61,768	56,114	−9.2
Gas and fuel oil	88,907	254,910	287,481	320,476	364,991	365,195	392,342	+7.4
Lubricating oil	12,329	23,304	26,128	27,498	31,055	32,293	31,721	−1.8
Exports, domestic:								
Crude oil	2,970	9,995	17,061	17,605	13,125	15,406	15,843	+2.8
Refined oils [5]	48,716	59,592	77,893	93,411	93,843	108,398	115,399	+6.5
Weighted average price:								
Crude oil (wells), per barrel	$0.93	$1.78	$1.71	$1.84	$1.96	$2.03	$1.55	−23.6
Gasoline, per gallon	.130	.217	.175	.159	.166	.175	.150	−14.3
Kerosene, per gallon	.076	.124	.128	.127	.123	.147	.129	−12.2

[1] Preliminary.
[2] Not including petroleum consumed on leases and produced but not transported from producing properties. Estimated production, including these items, 903,800,000 barrels.
[3] Based on estimated total, 903,800,000 barrels.
[4] 1914 production, Bureau of the Census.
[5] Does not include fuel or bunker oil laden on vessels engaged in foreign trade or shipments to noncontiguous territories. See headnote, Table 36.

GENERAL POSITION AND CHARACTER

The petroleum industry includes the production and transportation of crude oil, the refining of the crude oil by fractional distillation and other processes into a variety of products, and an elaborate system of transporting and distributing these products. While complete statistics are not compiled each year on all phases of the industry, the available data show that in 1926 there were approximately 335,000 producing wells and that on May 1, 1926, there were 90,000 miles of pipe lines with a cubic capacity of 15,750,000 barrels. On June 30, 1926, 384 tank vessels of 1,000 gross tons or over of Ameri-

Chart V.—CRUDE PETROLEUM: PRODUCTION AND STOCKS, BY MONTHS



can registry, with an aggregate gross tonnage of 2,319,314, were used principally for the transportation of mineral oil, and in 1927 approximately 145,300 tank cars were also used for transporting petroleum and its products. On January 1, 1928, there were 423 refineries in the United States having a total daily capacity of 3,250,000 barrels. This compares with 466 refineries with a total capacity of 3,061,000 barrels a year earlier. The year 1927, with its depressed prices, was a particularly hard year for the small refiners and many of them were forced to shut down or even to dismantle their plants.

CRUDE PETROLEUM

United States production of crude petroleum in 1927 amounted to approximately 904,000,000 barrels, of which 894,000,000 barrels were transported from producing properties and the remainder was burned

as fuel on the leases or added to producers' stocks. The production was the highest on record and was an increase of approximately 17 per cent over 1926.

Table 36.—Petroleum: Production, Exports, and Imports of Crude, and Exports of Refined Products

NOTE.—Domestic exports of refined oils, wax, coke, and asphalt, including shipments to Alaska, Hawaii, and Porto Rico, were 116,087,000 barrels in 1926 and 125,696,000 barrels in 1927.

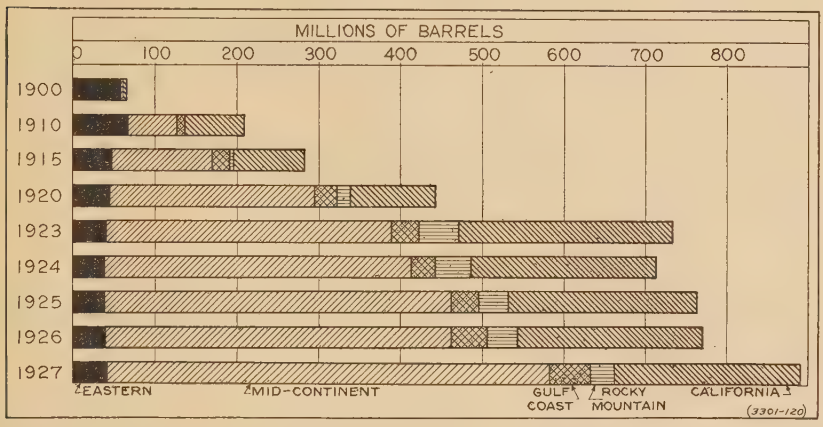
Period	Crude oil					Domestic exports of refined oils
	Production	Value	Exports	Imports	Net retained supply	
	1,000 barrels	*1,000 dollars*	*1,000 barrels*	*1,000 barrels*	*1,000 barrels*	*1,000 barrels*
1871–1880	12,519	19,678	528	[1]	----------	6,026
1881–1890	29,249	23,381	1,719	[1]	----------	12,084
1891–1895	51,095	35,708	2,606	[1]	----------	16,751
1896–1900	59,498	56,836	2,907	[1]	----------	20,240
1901–1905	102,083	83,524	3,029	[1]	----------	22,317
1906–1910	172,769	119,572	3,686	[1]	----------	30,521
1911–1915	247,739	185,793	4,134	12,080	255,685	44,475
1916–1920	362,661	735,698	5,413	49,531	406,779	58,896
1921–1925	647,961	999,186	[2] 13,559	94,857	729,259	76,455
1918	355,928	703,944	4,901	37,736	388,763	59,727
1919	378,367	760,266	[2] 6,019	52,822	425,170	52,641
1920	442,929	1,360,745	[2] 8,757	106,175	540,347	65,278
1921	472,183	814,745	[2] 8,940	125,364	588,607	57,534
1922	557,531	895,111	[2] 10,163	127,308	674,676	59,592
1923	732,407	978,430	[2] 17,385	82,015	797,037	77,893
1924	713,940	1,022,683	[2] 17,973	77,775	773,742	93,411
1925	763,743	1,284,960	[2] 13,335	61,824	812,232	93,843
1926	770,874	1,447,760	[2] 15,407	60,382	815,849	108,398
1927 [3]	894,435	[4]	[2] 15,843	58,156	936,748	115,399

[1] Not reported separately.
[2] Includes foreign exports. For previous years data are for domestic exports.
[3] Preliminary, subject to revision. See also Note 2, Table 35, for production.
[4] Not available.
Source: Bureau of Mines, Department of Commerce.

The domestic petroleum situation in 1927 was characterized by a continued overproduction, which resulted mainly from the record-breaking output of the Seminole district of Oklahoma. The peak of production was reached in July (Table 38), which was also the record month in the Seminole field. Production then declined steadily, except during October, but was considerably higher at the close of the year than at the beginning. Practically all of the increase in output in 1927 occurred in the mid-continent district (Chart VI and Table 37), more specifically in the Seminole section which produced approximately 135,000,000 barrels as compared with only 11,000,000 barrels in 1926. Production records were broken almost daily when development in this field was at its height and Oklahoma regained its position as the leading producing State, displacing California. The area of next greatest importance was west Texas, comprising Crane, Upton, Pecos, and Winkler Counties. The most spectacular pool from the standpoint of size of wells in this area was the Yates pool in Pecos County. However, the west Texas oil has

generally been found to be of comparatively low gravity with high sulphur content, which, with the isolated location, has militated against a rapid development such as would have probably followed had the oil been of the same grade as that found at Seminole.

Chart VI.—CRUDE PETROLEUM: PRODUCTION BY DISTRICTS



Owing mainly to the continued decline of the Smackover field in Arkansas, the production of heavy crude of gravity below 24° A. P. I. again showed a material decline. On the other hand, the output of the lighter grades showed an increase of over 150,000,000 barrels.

Table 37.—Production of Crude Petroleum, by Districts

District	Thousands of barrels of 42 U. S. gallons							
	1900	1910	1915	1920	1924	1925	1926	1927 [1]
Total	63,621	209,557	281,104	442,929	713,940	763,743	770,874	894,435
Eastern districts:								
Appalachian	36,295	26,893	22,860	30,630	27,056	27,610	28,572	30,458
Lima-Indiana	21,759	7,254	4,269	2,407	2,287	2,120	2,030	1,833
Illinois and southwest Indiana		33,143	19,042	11,427	8,747	8,512	8,418	7,751
Mid-continent	917	59,217	123,294	250,111	375,479	424,331	423,867	543,343
Gulf Coast		9,680	20,579	27,682	28,569	33,112	45,275	49,679
Rocky Mountain	323	355	4,454	17,282	[2] 42,869	35,554	[3] 37,945	30,184
California	4,325	73,011	86,592	103,377	228,933	232,492	224,673	230,752
Other	2	4	14	13		[4] 12	[5] 94	[5] 435

[1] Preliminary, subject to revision. See also note 2, Table 35.
[2] Including Alaska and Utah.
[3] Including Alaska.
[4] Michigan and Alaska.
[5] Michigan.

Source: Bureau of Mines, Department of Commerce.

The low price of crude petroleum which prevailed throughout 1927 furnished little incentive for development work. No new fields of great importance were discovered in Oklahoma, unless the various

extensions to the Seminole area could be classed as new pools. The most notable discovery in Kansas was the Oxford pool in Sumner County. A number of new salt domes were proved for production in the Gulf coast area, but it remained for west Texas to supply the major portion of the new fields in 1927.

Drilling activity, as measured by the number of oil wells completed, reached its high and low points in the months of April and December, when 1,528 and 905 wells were completed, respectively. Data as to completions by fields and as to average initial production for 1927 are not yet available.

Table 38.—Crude Petroleum Production and Runs to Stills, by Months

[In thousands of barrels]

Period	Total production [1]	District								Runs to stills
		Appalachian	Michigan	Lima-Indiana	Illinois and southwest Indiana	Mid-continent	Gulf coast	Rocky Mountains [2]	California	
1926										
January	59,981	2,162	2	157	689	31,911	2,832	3,181	19,047	61,103
February	54,892	2,126	1	158	655	29,049	2,694	3,034	17,175	56,347
March	60,880	2,386	2	179	779	32,453	2,758	3,497	18,826	62,743
April	60,371	2,375	3	171	633	33,090	2,757	3,286	18,056	61,531
May	62,822	2,358	3	176	707	34,643	2,816	3,403	18,716	65,354
June	61,789	2,451	3	195	718	34,244	2,632	3,270	18,276	64,810
July	65,168	2,491	3	183	736	35,844	3,645	3,475	18,791	67,335
August	67,009	2,460	7	174	724	36,604	4,872	3,263	18,905	67,589
September	65,782	2,450	8	169	711	36,207	4,911	3,108	18,218	66,420
October	69,664	2,485	15	166	704	39,351	4,896	3,027	19,020	68,907
November	69,891	2,381	20	146	672	39,536	5,088	2,799	19,249	67,641
December	72,625	2,447	26	156	690	40,935	5,374	2,602	20,395	69,484
1927										
January	71,475	2,319	29	140	642	40,808	4,766	2,586	20,185	69,603
February	67,874	2,327	29	156	615	40,227	4,152	2,385	17,983	63,036
March	75,304	2,659	38	170	751	44,854	4,374	2,622	19,836	68,741
April	72,590	2,532	40	156	588	42,945	4,116	2,719	19,494	66,624
May	76,275	2,598	39	161	659	46,329	4,263	2,720	19,506	69,759
June	74,538	2,596	41	171	661	45,175	4,163	2,550	19,181	67,697
July	78,333	2,547	37	155	634	48,824	4,056	2,761	19,319	71,625
August	77,998	2,740	40	158	671	48,596	4,014	2,500	19,279	71,001
September	75,081	2,585	38	153	689	46,314	3,944	2,293	19,065	68,586
October	77,081	2,589	38	153	621	47,910	4,023	2,298	19,449	71,932
November	73,778	2,525	33	131	625	45,861	3,801	2,286	18,516	69,587
December	74,108	2,441	33	129	595	45,500	4,007	2,464	18,939	70,323

[1] Not including petroleum consumed on leases and produced but not transported from producing properties.

[2] Including Alaska and Utah.

Source: Bureau of Mines, Department of Commerce.

Net imports of crude petroleum in 1927 amounted to 58,156,000 barrels, a slight decrease from 1926. Mexico continued to be the largest single source of supply, but its proportion has declined till it is less than one-half, with South America rapidly becoming more important.

Exports of crude petroleum continued to be of relatively minor importance, totaling 15,843,000 barrels, a small increase over 1926. The major portion of this oil was consigned to Canada. Intercoastal shipments of crude petroleum and refined products from California to Atlantic and Gulf ports showed little change from 1926.

The refinery consumption of petroleum as measured by runs to stills of both domestic and foreign crude totaled 828,514,000 barrels as compared with 779,264,000 barrels in 1926 (Table 39), a gain of 6 per cent. Of this amount, 779,813,000 barrels were of domestic origin and 48,701,000 barrels were of foreign origin.

Table 39.—Indicated Consumption of Crude Petroleum

NOTE.—Consumption is calculated from production, stocks, export and import figures and represents not that of finished products by final consumers but of crude oil by refiners and oil used for road and other purposes.

[In thousands of barrels]

Year	Production	Imports less reexports	Domestic exports	Change in stocks end of year	Indicated consumption	Oil run to stills
1915	281,104	18,139	3,768	+4,704	290,771	
1916	300,767	20,797	4,096	−16,972	334,440	246,992
1917	335,316	30,127	4,098	+10,760	350,585	315,132
1918	355,928	37,736	4,901	−23,510	412,273	326,025
1919	378,367	52,727	5,924	+4,708	420,462	361,520
1920	442,929	105,462	8,045	+17,933	522,413	433,915
1921	472,183	125,290	8,866	+67,876	520,731	443,363
1922	557,531	127,141	9,995	+78,384	596,293	500,706
1923	732,407	80,500	17,061	+82,175	713,671	581,238
1924	713,940	77,407	17,605	[1]+39,713	734,029	643,719
1925	763,743	61,614	13,125	[1]+11,207	801,025	739,920
1926	770,874	60,381	15,407	[1]−29,347	845,195	779,264
1927	[2] 894,435	58,156	15,843	[1]+61,202	875,546	828,514

[1] See note 6, Table 40, and for 1926 also note 7, Table 40.
[2] See note 2, Table 35.

Source: Bureau of Mines, Department of Commerce.

Table 40.—Stocks of Crude Petroleum as of December 31 [1]

[In thousands of barrels of 42 U. S. gallons]

Stocks	1921	1922	1923	1924	1925	1926	1927
Pipe-line and tank-farm net stocks, by district of origin:							
Appalachian	6,838	8,868	9,210	9,286	8,493	7,790	7,326
Lima-Indiana	1,014	685	975	1,221	971	666	1,134
Illinois and southwestern Indiana	7,567	10,140	11,091	10,870	10,582	11,770	12,170
Mid-continent	102,401	152,573	202,904	210,558	195,941	173,848	246,931
Gulf coast	17,606	24,781	23,974	20,200	19,263	20,031	17,526
Rocky Mountain	1,635	1,991	19,704	28,672	28,995	28,075	27,235
Producers' stocks [2]	5,139	8,428	9,850	8,389	7,560	5,904	([3])
Refiners' stocks:							
Domestic	26,562	22,558	29,756	27,890	22,969	32,251	35,284
Foreign [4]		11,247	3,503	3,294	4,188	3,224	3,951
Importers' stocks (foreign)	[4] 13,540	5,062	4,754	734	407	609	89
Total stocks east of California	182,302	246,333	315,721	321,114	299,369	284,168	351,646
California (gross stocks) [5]	35,022	49,375	62,162	[6] 96,482	[6]129,434	[6]118,131	[6] 111,855
Grand total	217,324	295,708	377,883	417,596	[7]428,803	402,299	463,501

[1] Reported by revised method.
[2] Exclusive of producers' stocks in California.
[3] Not available.
[4] Refiners' stocks of foreign crude oil included in importers' stocks prior to 1922.
[5] Including producers', pipe-line, and tank-farm (but not refinery) stocks of crude oil, residuum, and tops.
[6] Including fuel oil to the amount of 26,669,000 barrels in 1924, and to an indeterminable amount in 1925, 1926, and 1927.
[7] For comparison with 1926, 2,843,000 barrels should be added to cover 2,043,000 barrels in coastwise transit and 800,000 barrels of working stock in California not previously recorded.

Source: Bureau of Mines, Department of Commerce.

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Stocks of crude petroleum east of California showed a consistent increase throughout the year, rising from 284,168,000 barrels on January 1 to 351,646,000 barrels at the close of the year. (Table 40.) Stocks of light or refinable crude in California were very materially reduced during the year, but stocks of heavy crude and fuel oil in that State continued to increase.

World production totaled 1,252,000,000 barrels, an increase of 154,000,000 barrels, or 14 per cent, over 1926. The United States continued to produce more than 70 per cent of the world total.

The decrease of 26,000,000 barrels in Mexican production caused that country to lose the second position among oil-producing countries which it had held for the past nine years. The rehabilitation of the petroleum industry in Russia made good progress in 1927, and that country became the second largest producer as the result of an 8,000,000-barrel increase in production. Venezuela also registered a notable gain in output in 1927. The largest percentage increase was noted in Colombia, where production increased from 6,444,000 barrels in 1926 to 14,600,000 barrels in 1927.

REFINED PRODUCTS

The value of the output of the petroleum refining industry in 1925, as reported by the Bureau of the Census and shown in Table 41, amounted to $2,377,000,000 as compared with $1,794,000,000 in 1923, an increase of about 32 per cent. Of the total value of products the cost of materials represented about four-fifths as in previous years. Almost 23 per cent more crude oil was consumed by the industry in 1925 than in 1923.

Table 41.—Petroleum Refining Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture	Crude oil consumed
				1,000 dollars	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 barrels*
1899	67	12,199	36,127	6,717	102,859	123,929	21,070	52,011
1909	147	13,929	89,983	9,830	199,273	236,998	37,724	120,775
1914	176	25,366	128,190	19,397	325,265	396,361	71,097	191,263
1919	320	58,889	238,906	89,750	1,247,908	1,632,533	384,624	365,272
1921 [1]	366	63,189	[2]	102,294	1,382,170	1,727,440	345,270	[3]
1923 [1]	382	66,717	391,154	103,834	1,425,053	1,793,700	368,647	601,748
1925 [1]	359	65,324	393,753	104,645	1,889,678	2,376,657	486,979	739,489

[1] The figures for 1921, 1923, and 1925 do not include establishments reporting products under $5,000 in value.
[2] Not called for in schedule for 1921.
[3] No exact data: estimated at 485,500,000 barrels of crude oil and partially run distillates.
Source: Bureau of the Census.

According to reports of the Bureau of Mines, the average number of refineries operating during 1927 was 326, and the average daily crude oil capacity was 2,884,000 barrels. These refineries operated through-

out the year within a range of 77 to 81 per cent of their capacity. Total runs to stills of domestic and foreign crude amounted to 828,514,000 barrels. In addition, 32,161,000 barrels of natural gasoline were run to stills or blended by refiners.

The increased supply of light crude, such as that found in the Seminole section, caused a further increase in the recovery of gasoline, which rose from 38.5 per cent in 1926 to 39.9 per cent in 1927. (See headnote to Table 42.) Although the amount of gasoline produced by cracking was greater than in 1926, the proportion to the total declined from 31.3 to 30.7 per cent. This was undoubtedly owing to the abundance of cheap crude available for skimming purposes. A further decline in the percentage recovery of both kerosene and lubricants was recorded, but that of gas and fuel oil made a rather unexpected increase because of the growth of skimming operations.

Table 42.—Percentage Yield of Major Refined Products

NOTE.—The figures, although obtained by dividing by the quantity of crude oil run to stills, do not strictly represent the proportions of the several products actually obtained from crude oil, especially because gasoline obtained by rerunning natural-gas gasoline, a rapidly increasing quantity, is included.

Product	All regions									
	1916	1918	1920	1921	1922	1923	1924	1925	1926	1927
Gasoline	19.8	26.1	26.8	27.7	29.5	30.9	33.1	35.1	38.5	39.9
Kerosene	14.0	13.3	12.7	10.4	11.0	9.6	9.3	8.1	7.9	6.8
Gas and fuel oil	45.0	53.5	48.6	51.9	50.9	49.5	49.8	49.3	46.9	47.4
Lubricants	6.0	6.1	5.7	4.7	4.7	4.5	4.3	4.2	4.1	3.8

	Refinery districts											
	East Coast			Appalachian			Indiana, Illinois, etc.			Oklahoma, Kansas, etc.		
	1916	1921	1927	1916	1921	1927	1916	1921	1927	1916	1921	1927
Gasoline	20.7	25.1	32.9	21.1	32.6	43.5	34.3	45.3	57.6	32.5	36.0	54.2
Kerosene	22.4	11.1	7.0	27.3	19.1	13.3	14.8	10.4	6.9	19.4	11.4	9.0
Gas and fuel oil	30.2	54.1	48.9	18.0	23.4	24.2	26.1	27.7	28.8	54.2	45.0	33.0
Lubricants	12.6	6.5	6.8	23.5	18.3	15.2	8.9	5.9	4.4	1.2	2.4	2.3

	Texas			Louisiana and Arkansas			Rocky Mountain			California		
Gasoline	[1] 10.9	25.3	42.7	(1)	25.0	34.1	31.9	52.2	57.2	11.7	14.3	28.8
Kerosene	[1] 8.9	12.3	8.3	(1)	11.8	8.7	16.4	10.7	7.4	4.9	4.5	2.7
Gas and fuel oil	[1] 42.0	55.7	43.3	(1)	48.5	44.8	53.4	44.3	29.4	67.2	70.3	69.3
Lubricants	[1] 2.3	5.2	4.7	(1)	1.2	1.1	.7	2.0	2.4	1.6	2.2	1.1

[1] Louisiana included with Texas in 1916.

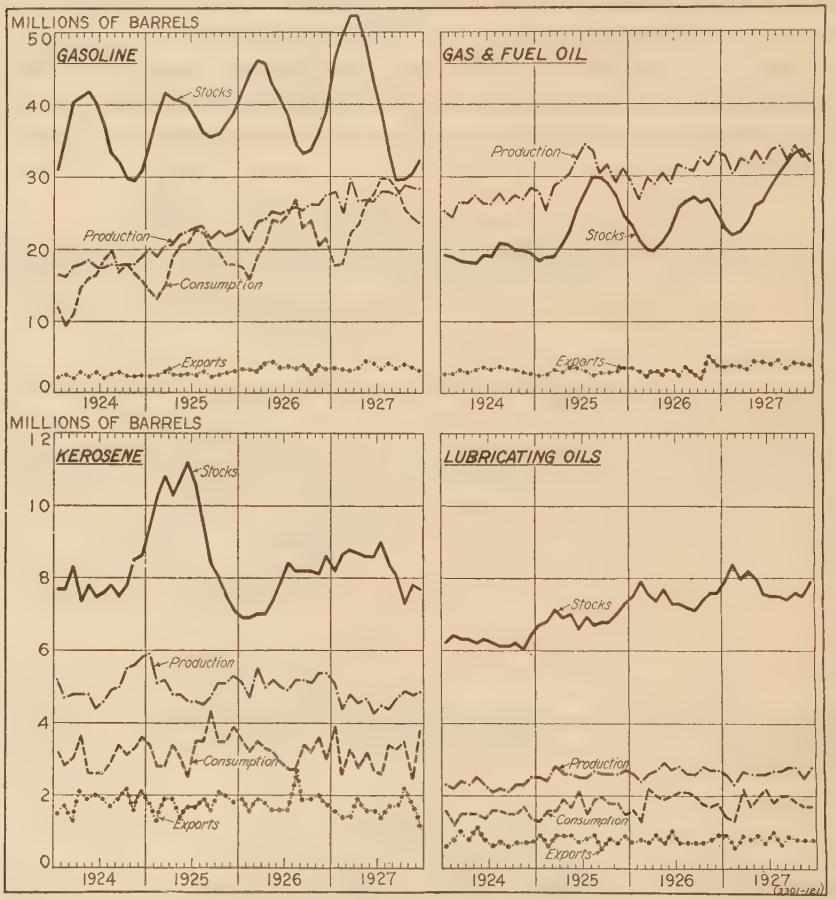
Source: Bureau of Mines, Department of Commerce.

Gasoline production at refineries for the year 1927 amounted to 330,667,000 barrels, an increase over 1926 of 10 per cent. The indicated domestic demand for the year totaled 297,928,000 barrels, which was 14 per cent above that of 1926. As would be expected,

gasoline consumption was at its highest during the months of July and August. During four months of the year the indicated domestic demand was higher than domestic production, which, with exports above the 1926 level, resulted in material withdrawals from stock. The gasoline storage situation, in general, supplied one of the most

Chart VII.—PRINCIPAL PETROLEUM PRODUCTS: PRODUCTION, EXPORTS, STOCKS, AND INDICATED CONSUMPTION, BY MONTHS

NOTE.—The scales for the two sections of the chart are in the ratio of about 5 to 1. For production data see table 44.



encouraging features of the year, indicating a tendency on the part of refiners to maintain a better balance between supply and demand. Gasoline stocks as of the first and last of the year were 39,023,000 and 32,323,000 barrels, respectively. This represented the first year since 1918 that gasoline stocks were not increased.

Kerosene and lubricants both showed decreased production and domestic demand. The decline in the use of kerosene was undoubtedly owing to its decreased use as an illuminant, although much of

this decrease was probably compensated by a growth in its use as tractor fuel. The decreased consumption of lubricants may seem surprising in view of the increase in number of automobiles, but it represents a tribute to the efficiency of various new oil-saving and purifying devices.

Table 43.—Refined Petroleum Products: Production, Imports, Exports, Stocks, and Domestic Demand

NOTE.—Data on oil run to stills are shown in Table 39. For monthly figures see Table 38.

[In thousands of barrels]

Period	Gasoline					Gas and fuel oil				
	Production	Imports [1]	Exports [2]	Stocks, end of period	Domestic demand [3]	Production	Imports [1]	Exports [2]	Stocks, end of period [4]	Domestic demand [3]
1919	94,235	203	9,097	10,638	81,783	181,602	-------	16,487	17,003	163,803
1920	116,251	964	15,636	11,009	101,208	210,987	-------	22,080	19,938	185,972
1921	122,704	900	13,134	13,954	107,525	230,091	-------	22,676	31,697	195,656
1922	147,672	1,479	14,156	21,043	127,906	254,910	2,947	18,479	31,065	240,010
1923	179,903	4,555	20,741	28,014	156,746	287,481	12,286	33,372	36,072	261,388
1924	213,326	3,453	28,967	30,823	185,003	320,476	12,927	37,249	39,774	292,452
1925	259,601	3,813	31,497	38,875	223,865	364,991	12,245	36,088	24,681	(5)
1926	299,734	5,540	43,313	39,023	261,813	365,195	14,432	38,351	24,898	(5)
1927	330,667	5,003	44,442	32,323	297,928	392,342	8,123	47,339	31,982	(5)
Per cent change from 1926	+10.3	−9.7	+2.6	−17.2	+13.8	+7.4	−43.7	+23.4	+28.5	-------
1927										
January–March	80,870	1,429	10,320	52,410	58,592	95,498	2,238	11,201	22,561	(5)
April–June	79,980	1,457	12,330	43,768	77,749	97,046	2,482	12,147	26,590	(5)
July–September	83,844	1,053	10,955	29,738	87,972	100,130	1,581	11,944	31,631	(5)
October–December	85,973	1,064	10,837	32,323	73,615	99,668	1,822	12,047	31,982	(5)

Period	Kerosene					Lubricants				
	Production	Imports [1]	Exports [2]	Stocks, end of period	Domestic demand [3]	Production	Imports [1]	Exports [2]	Stocks, end of period	Domestic demand [3]
1919	55,753	-------	23,536	8,079	33,188	20,161	-------	6,598	3,269	13,600
1920	55,240	-------	20,878	9,359	33,082	24,938	-------	9,643	3,822	14,742
1921	46,313	-------	18,016	8,119	29,537	20,896	-------	6,936	5,735	12,047
1922	54,913	3	21,489	6,692	34,854	23,304	43	7,941	5,613	15,528
1923	55,927	7	20,347	7,231	35,048	26,128	29	8,372	6,138	17,260
1924	60,026	10	21,961	8,594	36,712	27,498	11	11,988	6,420	18,124
1925	59,689	19	21,212	7,121	39,969	31,055	37	9,678	7,253	20,581
1926	61,768	74	22,248	8,575	38,140	32,293	33	9,435	7,576	22,568
1927	56,114	55	19,480	7,669	37,595	31,721	7	9,810	7,860	21,634
Per cent change from 1926	−9.2	−25.7	−12.4	−10.6	−1.4	−1.8	−78.8	+4.0	+3.7	−4.1
1927										
January–March	14,368	4	4,366	8,753	9,828	7,669	2	2,379	8,035	4,833
April–June	13,579	4	5,110	8,567	8,659	7,811	3	2,384	7,628	5,837
July–September	13,590	4	4,735	8,120	9,306	8,206	1	2,608	7,447	5,780
October–December	14,577	43	5,269	7,669	9,802	8,035	1	2,439	7,860	5,184

[1] Data except for gasoline not available prior to October, 1922.
[2] Including shipments to Alaska, Hawaii, and Porto Rico.
[3] Indicated deliveries by refineries for United States consumption.
[4] East of California only, for gas and fuel oil.
[5] Not available.

Source: Bureau of Mines, Department of Commerce.

PRICES AND MARKETS

The average price of crude petroleum which increased each year from 1923 to 1926 dropped precipitously in 1927. (Chart VIII and Table 45.) Prices for the grades selected averaged only $1.55 per

barrel at the wells in 1927 as compared with $2.03 in 1926. This decline of 24 per cent brought the average price of crude to the lowest point in over 10 years.

Table 44.—Production of Refined Petroleum Products, by Months

[In thousands of barrels]

Month	Gasoline						Gas and fuel oil					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
January	10,586	14,850	16,555	20,043	23,208	27,960	20,431	23,557	25,307	28,000	28,981	32,936
February	9,481	13,539	16,279	19,182	21,259	25,024	18,121	21,490	24,417	25,355	27,094	30,185
March	11,245	15,017	17,696	20,631	23,868	27,886	20,217	23,116	26,534	28,825	29,824	32,377
April	11,260	14,739	17,971	20,752	24,296	26,577	18,849	23,256	26,589	29,453	29,029	31,856
May	12,230	15,041	18,552	21,996	25,271	26,787	22,303	23,004	27,522	30,441	30,380	33,499
June	12,522	15,160	17,550	22,488	24,946	26,616	21,501	23,116	26,350	32,519	29,130	31,691
July	13,565	15,165	17,666	23,073	25,504	28,118	22,834	25,077	26,257	34,495	31,461	33,693
August	13,094	15,451	17,995	23,191	25,942	28,010	22,483	24,063	27,791	33,502	31,154	34,098
September	12,774	14,851	17,864	21,573	25,360	27,716	21,854	24,586	26,521	30,579	30,698	32,339
October	13,483	15,692	18,111	22,488	26,337	28,903	21,943	25,471	27,635	31,559	32,444	34,045
November	13,502	14,704	18,144	21,946	26,245	28,558	21,228	25,189	27,003	29,306	31,624	32,594
December	13,930	15,694	18,943	22,238	27,498	28,512	23,146	25,556	28,550	30,957	33,376	33,029
	Kerosene						Lubricants					
January	4,117	5,058	5,185	5,897	5,122	5,113	1,769	2,073	2,251	2,467	2,648	2,570
February	3,981	4,295	4,686	5,101	4,746	4,453	1,646	1,845	2,234	2,401	2,448	2,345
March	4,257	4,540	4,763	5,228	5,516	4,802	1,747	2,161	2,408	2,831	2,646	2,754
April	4,495	4,332	4,838	4,774	5,037	4,608	1,737	2,159	2,309	2,559	2,692	2,615
May	4,139	4,504	4,762	4,810	5,210	4,663	1,901	2,509	2,486	2,609	2,863	2,625
June	4,135	4,264	4,360	4,600	5,009	4,308	1,908	2,279	2,309	2,500	2,681	2,571
July	4,593	4,482	4,624	4,592	4,877	4,484	2,184	2,237	2,083	2,499	2,831	2,672
August	4,390	4,434	4,860	4,465	5,162	4,420	2,115	2,078	2,209	2,675	2,648	2,752
September	4,713	4,612	5,043	4,710	5,207	4,686	1,954	2,076	2,148	2,565	2,645	2,782
October	5,124	4,556	5,540	5,121	5,126	4,884	2,080	2,095	2,315	2,608	2,768	2,757
November	5,582	5,257	5,560	5,064	5,357	4,824	2,125	2,289	2,261	2,630	2,724	2,477
December	5,387	5,593	5,805	5,327	5,399	4,869	2,138	2,327	2,485	2,711	2,699	2,801

Source: Bureau of Mines, Department of Commerce.

Chart VIII.—INDEX NUMBERS OF PRICES OF CRUDE PETROLEUM AND GASOLINE

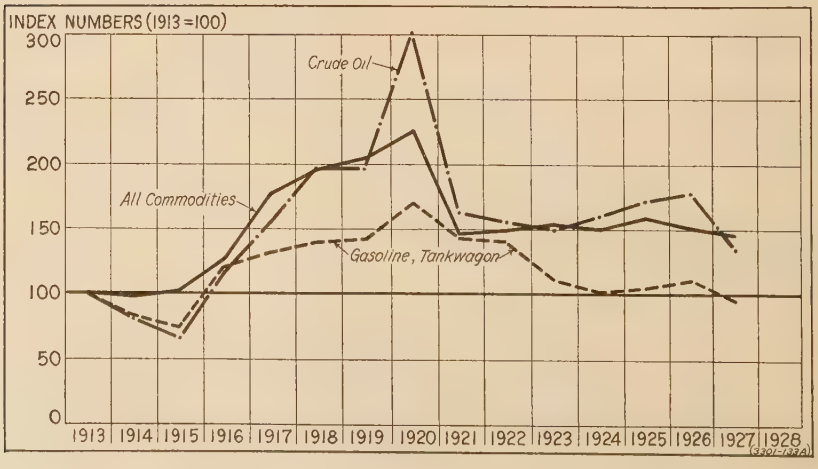


Table 45.—Mineral Oil Prices in the United States

[These prices calculated by Joseph E. Pogue, of New York, are based on similar compilations by Pogue and Lubin in "History of Prices During the War," published by the War Industries Board. The weighted average prices were calculated from weekly quotations in trade journals, crude prices (at wells) covering five principal grades from different fields; gasoline and kerosene prices from tank wagon at five principal cities; fuel-oil prices ex-refinery for five refinery locations: and lubricating oil jobbing quotations for five different grades]

Year	Average prices					Relative prices (1913 average=100)				
	Crude oil (barrel)	Gasoline (gallon)	Kerosene (gallon)	Fuel oil (barrel)	Lubricating oil (gallon)	Crude oil	Gasoline	Kerosene	Fuel oil	Lubricating oil
1913	$1.14	$0.156	$0.079	$1.06	$0.154	100	100	100	100	100
1919	2.25	.222	.127	1.59	.322	197	142	162	149	209
1920	3.44	.265	.171	2.79	.490	302	170	217	262	318
1921	1.86	.223	.129	1.30	.276	163	143	164	122	179
1922	1.78	.217	.124	1.24	.204	156	140	158	117	132
1923	1.71	.175	.128	1.20	.194	150	112	163	113	125
1924	1.84	.159	.127	1.35	.230	161	102	162	127	149
1925	1.96	.166	.123	1.46	.261	172	106	156	137	170
1926	2.03	.175	.147	1.47	.261	178	112	187	138	170
1927	1.55	.150	.129	1.14	.253	136	96	164	108	165

Table 46.—Average Mineral Oil Prices, by Months

NOTE.—See headnote to Table 45.

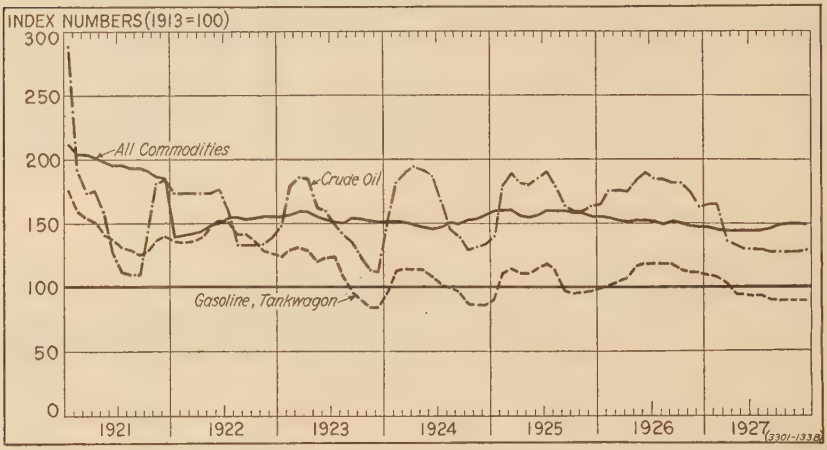
Month	Crude oil (barrel)	Gasoline (gallon)	Kerosene (gallon)	Fuel oil (barrel)	Lubricating oil (gallon)	Crude oil (barrel)	Gasoline (gallon)	Kerosene (gallon)	Fuel oil (barrel)	Lubricating oil (gallon)
	Average price, 1924					Average price, 1925				
January	$1.72	$0.152	$0.129	$1.32	$0.211	$1.59	$0.141	$0.122	$1.59	$0.249
February	2.08	.177	.134	1.53	.240	2.05	.175	.124	1.69	.271
March	2.16	.180	.135	1.46	.243	2.15	.180	.126	1.63	.269
April	2.21	.180	.135	1.35	.250	2.07	.175	.126	1.46	.260
May	2.19	.178	.131	1.29	.242	2.05	.174	.126	1.35	.259
June	2.13	.169	.130	1.25	.232	2.11	.181	.126	1.41	.273
July	1.89	.159	.127	1.24	.220	2.16	.184	.126	1.40	.273
August	1.67	.154	.124	1.22	.213	2.03	.177	.125	1.41	.260
September	1.57	.151	.122	1.30	.218	1.87	.151	.119	1.33	.250
October	1.47	.136	.122	1.33	.225	1.81	.148	.114	1.31	.252
November	1.50	.134	.122	1.36	.226	1.81	.150	.119	1.37	.254
December	1.52	.134	.122	1.51	.243	1.87	.152	.125	1.52	.266
	Average price, 1926					Average price, 1927				
January	$1.88	$0.154	$0.126	$1.46	$0.281	$1.88	$0.171	$0.138	$1.48	$0.242
February	2.01	.159	.133	1.40	.282	1.87	.168	.135	1.49	.252
March	2.01	.164	.139	1.44	.276	1.57	.159	.133	1.41	.251
April	2.00	.169	.140	1.51	.267	1.52	.149	.132	1.24	.255
May	2.09	.182	.155	1.50	.263	1.50	.149	.128	1.10	.256
June	2.15	.186	.158	1.44	.263	1.50	.145	.126	1.04	.258
July	2.11	.186	.150	1.42	.261	1.50	.146	.126	1.04	.258
August	2.10	.186	.154	1.50	.255	1.46	.143	.126	.995	.258
September	2.07	.186	.162	1.53	.248	1.46	.142	.126	.996	.262
October	2.07	.178	.153	1.48	.248	1.46	.142	.126	1.03	.258
November	1.99	.174	.149	1.50	.246	1.46	.142	.126	.972	.248
December	1.86	.174	.143	1.48	.243	1.48	.142	.126	.938	.244

The slump in prices in the petroleum industry in 1927 was not confined to crude petroleum, for refined products almost without exception also felt the effects of the overproduction. The average

price of gasoline at five selected cities in 1927 was 15 cents per gallon as compared with 17½ cents in 1926, a decrease of 14 per cent. It is worthy of note that this sharp decline in the price of gasoline brought the price 4 per cent lower than in 1913, whereas the average price for all commodities in 1927 was 47 per cent higher than in 1913.

The other important refined products—kerosene, fuel oil, and lubricating oils—all declined in price in 1927. Fuel oil prices, in particular, were very low in 1927, the average realization at five refineries

Chart IX.—INDEX NUMBERS OF PRICES OF CRUDE PETROLEUM AND GASOLINE, BY MONTHS



being only $1.14 per barrel. This represents a relative price only 8 per cent higher than in 1913.

In general, except for lubricating oils, prices for both crude petroleum and refined products were at their highest 1927 levels in January, showing a gradual weakening throughout the year. (Chart IX and Table 46.)

FOREIGN TRADE

The history of the export trade in petroleum and petroleum products has been one of almost uninterrupted progress since the beginning of the present century. In 1913 the total domestic exports of liquid products were more than double what they had been in 1900. In 1918 exports were almost three times as great as at the beginning of the century and 27 per cent greater than in 1913. The unnatural stimulus given this trade by the war resulted in considerable instability in the years 1919 and 1920, but in 1921 equilibrium was again attained at a level slightly above that of 1918, and from that time to the end of 1927 there has been a continuous growth except for a slight decline in 1925.

Table 47.—Domestic Exports of Petroleum and Its Products

Year	Quantity (thousands of barrels)			Value (millions and tenths of millions of dollars)				
	Total [1] liquid products	Crude oil	Refined oils [2]	Grand total		All refined products	Crude oil	Refined oils [2]
				All products	Per cent of total exports			
1900	23,497	3,290	20,207	82.7	5.69	75.3	7.3	67.2
1905	29,060	3,004	26,055	87.5	5.47	81.4	6.1	73.6
1910	35,774	4,288	31,485	101.4	5.55	96.0	5.4	88.7
1911	42,113	4,806	37,307	113.0	5.49	106.8	6.2	99.8
1912	44,845	4,493	40,352	136.0	5.76	129.2	6.8	117.4
1913	50,871	4,633	44,622	159.8	6.53	151.4	8.4	139.7
1914	53,334	2,970	48,716	148.7	7.18	143.8	5.0	133.7
1915	55,446	3,768	51,377	157.9	4.52	153.6	4.3	138.3
1916	62,083	4,096	57,833	220.1	4.06	213.1	7.0	194.5
1917	63,122	4,098	58,999	273.9	4.44	266.2	7.7	245.2
1918	64,629	4,901	59,727	369.5	6.11	357.5	12.1	332.2
1919	59,351	5,924	52,641	374.5	4.83	359.7	14.8	327.0
1920	73,325	8,045	65,278	589.3	7.29	560.4	29.0	519.3
1921	66,618	8,865	57,534	400.0	9.13	379.7	20.2	363.5
1922	69,828	9,995	59,592	344.3	9.14	325.9	18.3	312.6
1923	94,988	17,061	77,893	365.6	8.94	342.5	23.1	327.0
1924	111,082	17,605	93,411	442.6	9.84	416.1	26.5	392.3
1925	107,063	13,125	93,843	473.0	9.81	448.7	24.3	422.6
1926	123,963	15,406	108,398	554.5	11.77	526.0	28.5	497.2
1927	131,460	15,843	115,399	485.9	10.21	460.0	25.9	429.7

[1] Including residuum. [2] Not including residuum.

Source: Bureau of Foreign and Domestic Commerce.

Table 48.—Domestic Exports of Petroleum Products

Product	Quantity (000 omitted)				Value (thousands of dollars)			
	1910–1914 [1]	1921–1925	1926	1927	1910–1914 [1]	1921–1925	1926	1927
Total value [2]					**122,739**	**382,565**	**526,038**	**459,959**
Per cent of all exports					5.8	8.9	11.2	9.7
Refined oils, total—bbls	38,964	76,455	108,398	115,399	112,956	363,586	497,212	429,663
Gasoline, etc—do	3,508	21,100	42,480	43,334	16,735	152,051	263,200	209,839
Kerosene—do	25,131	20,446	22,016	19,352	64,098	85,381	100,353	79,303
Gas and fuel oil—do	5,769	26,555	34,516	42,963	6,853	41,207	45,354	49,802
Lubricating oils—do	4,556	8,340	9,266	9,619	25,270	84,745	86,823	89,333
Red and pale—do			5,475	5,984			43,192	49,368
Black—do			609	672			3,511	3,487
Cylinder—do			3,172	2,950			39,712	35,989
Light, in small packages—gals			396	540			409	490
Insulating or transformer—do			3,257	2,845			1,086	836
Mineral spirits—do		[3] 962	1,763	2,648		[3] 337	396	550
Other products:								
Lubricating greases—lbs			96,083	100,483	[4] 2,309	4,395	5,213	5,299
Paraffin wax—do	228,423	311,435	335,584	340,423	7,917	13,828	18,934	15,034
Petroleum asphalt—tons		[5] 79	131	344		[5] 1,762	3,184	8,325
Petroleum coke—do			86	93			887	1,053
Residuum—bbls	[6] 1,677	131	160	217	[6] 1,202	403	608	584
Petroleum jelly—lbs			5,095	5,275	[6] 599	1,216	899	869

[1] Fiscal years ended June 30.
[2] Petroleum jelly is not included.
[3] Average for years 1923–1925.
[4] Average for years 1912–1914.
[5] 1925 only.
[6] Average for years 1913–14.

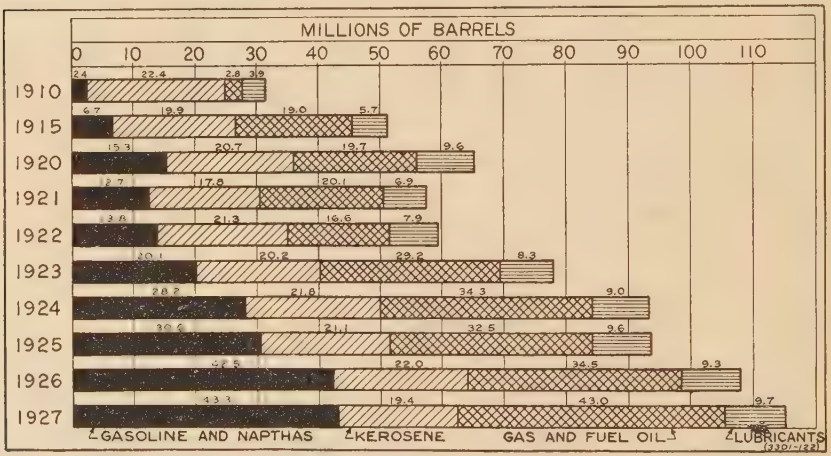
Source: Bureau of Foreign and Domestic Commerce.

The increase in world production of petroleum accompanied by intensified competition in export markets resulted in a quantity increase of 6 per cent in total exports of petroleum and refined oils

with a value decrease of 13 per cent in 1927 as compared with 1926. Total domestic exports of crude and refined oils (including residuum) in 1927 amounted to 131,460,000 barrels, which was almost six times as much as in 1900 and 97 per cent more than in 1921. (Table 47.) Exports of crude oil have always been relatively small and have represented between 10 and 20 per cent of quantitative exports of liquid products, except during war years when the ratio was less than 10 per cent.

The export trade in refined oils during 1927 again increased in quantity, but owing to a decline in price decreased decidedly in value. The total quantity of domestic refined oils exported amounted to 115,399,000 barrels, valued at $429,663,000, which was an increase over 1926 of 6.5 per cent in quantity and a decrease of 13.6 per

Chart X.—DOMESTIC EXPORTS OF PRINCIPAL PETROLEUM PRODUCTS



cent in value. Gas and fuel oil showed the most notable gain and amounted to 37 per cent of the quantity exported. Gasoline and lubricating oils showed quantity increases of 2 per cent and 4 per cent, respectively, but kerosene decreased 12 per cent. (Chart X and Table 48.)

Gasoline exports to Argentina about doubled in 1927, and there were also largely increased shipments to Australia, Algeria and Tunis, the Scandinavian countries, Spain, China, and Canada. Exports of gasoline to most of the European countries, on the other hand, declined.

The leading American countries (except Canada), Germany, the Scandinavian countries, and Japan were the recipients of increased gas and fuel-oil exports in 1927, as is indicated by Table 49. Exports of gas and fuel oil to Japan, Argentina, and Brazil more than doubled; exports to Uruguay increased about 78 per cent, and exports to Panama about 44 per cent. The largest relative increase was in shipments to

Cuba, which in 1927 amounted to 1,942,000 barrels as compared with 252,000 barrels in 1926. The United Kingdom continued to be our leading foreign market for the principal petroleum products, taking about 21 per cent in 1927.

Table 49.—Domestic Exports of Principal Petroleum Products, by Countries of Destination

[In thousands of barrels]

Country	Gasoline		Kerosene		Gas and fuel oil		Lubricants	
	1926	1927	1926	1927	1926	1927	1926	1927
Grand total	**42,480**	**43,334**	**22,016**	**19,352**	**34,516**	**42,963**	**9,266**	**9,619**
Europe:								
United Kingdom	14,694	13,691	3,043	3,170	5,709	5,507	2,201	2,025
France	7,398	6,833	2,066	1,129	680	93	1,588	1,255
Germany	1,590	1,231	641	816	845	1,258	825	1,161
Italy	1,033	983	517	258	279	182	459	392
Belgium	1,207	1,126	556	539	527	534	677	799
Netherlands	1,708	1,674	1,762	1,757	534	770	187	174
Spain	813	984	168	78	243	68	140	199
Scandinavian countries	1,698	2,615	1,142	1,073	753	1,139	304	298
Asia and Australasia:								
British India	2		1,748	1,361	(1)	(1)	378	414
Japan	493	356	2,441	1,533	2,149	4,419	202	261
China	107	131	2,587	2,125	664	683	126	126
Australia	1,944	2,470	571	600	2	16	359	385
New Zealand	975	1,061	109	115	995	919	71	74
Hong Kong	64	171	186	425	290	373	25	38
Philippine Islands	334	293	281	197	723	686	59	48
America:								
Argentina	681	1,350	326	336	2,140	4,308	211	321
Brazil	1,055	942	623	648	614	1,233	204	231
Chile	73	86	4	4	4,348	4,350	54	59
Uruguay	392	353	219	225	809	1,441	30	31
Mexico	225	364	20	51	924	1,043	83	75
Panama	168	97	53	36	5,106	7,360	10	11
Cuba	822	489	17	14	252	1,942	81	94
Canada	2,629	3,145	215	128	4,214	2,377	304	380
Africa:								
British South Africa	521	658	309	296	(1)	(1)	95	94
Algeria and Tunis	261	445	125	234	282		10	14

[1] Less than 500 barrels.

Source: Bureau of Foreign and Domestic Commerce.

Europe absorbed approximately 47 per cent of our total exports of all petroleum products. In this geographical area the increased distribution of Russian oils at prices under the prevailing international market quotations proved the greatest single factor influencing export prices and movements.

Imports of crude oil, shown in Table 50, amounted to 58,383,000 barrels in 1927, of which 26,019,000 barrels came from Mexico. The decline in the quantity of our imports of crude oil from 1923 to 1926 was accompanied by a steady increase in the total value of imports, the average unit value having doubled. The unit value in 1927 was slightly higher than in 1926, but the quantity imported was smaller than for several years, and consequently the total value was smaller. Imports of mineral oils, other than crude oil, continued to be relatively small. The total imports of refined products in 1927 amounted to 13,281,000 barrels, equivalent to less than 2 per cent of the total crude oil run to stills.

Table 50.—Imports of Petroleum and Its Products

[Quantities in thousands of barrels. Values in thousands of dollars]

Item	1910	1918	1921	1922	1923	1924	1925	1926	1927
Total:									
Quantity [1]	571	38,942	128,776	135,947	99,914	94,841	78,149	81,284	71,664
Value [2]	1,425	26,232	77,715	88,485	78,713	101,357	107,694	124,556	113,434
Crude oil:									
Quantity, total		37,736	125,364	127,308	82,015	77,775	61,824	60,382	58,383
From Mexico		37,719	125,294	126,195	79,354	73,979	55,049	40,398	26,019
Value, total		21,319	66,547	70,383	53,882	73,842	75,407	79,308	78,609
Refined and partly refined products:									
Quantity		1,207	3,410	8,639	17,593	16,759	16,325	20,902	13,281
Value		4,350	10,842	17,802	24,272	26,870	31,283	44,597	33,638
Fuel oil, quantity		[3]	[3]	2,947	12,286	12,927	12,245	14,432	8,124
Gasoline and like products, quantity		307	900	1,479	4,555	3,453	3,813	5,540	5,002

[1] Liquid products only.
[2] Including paraffin and paraffin wax from 1918 on.
[3] Not shown separately.

Source: Bureau of Foreign and Domestic Commerce.

NATURAL GAS AND NATURAL-GAS GASOLINE

Production of natural-gas gasoline in 1927 was 38,752,000 barrels, the highest on record. (Table 51.) This represents an increase over 1926 of 20 per cent. Nearly 85 per cent of the total production found its way to refineries, where the major portion of it was used as blending material. A large part of the increased output of natural-gas gasoline in 1927 was attributable to the Seminole district, where large quantities of gas of high gasoline content were produced. Natural-gas gasoline comprised 11.6 per cent of the total motor fuel output in 1927 as compared with 10.7 per cent in 1926.

Table 51.—Marketed Production of Natural Gas and Production of Natural-Gas Gasoline

[Production of gas is in billions of cubic feet; of gasoline in thousands of barrels; value in millions of dollars]

Year	Natural gas		Natural-gas gasoline		Year	Nautral gas		Natural-gas gasoline	
	Quantity	Value	Quantity	Value		Quantity	Value	Quantity	Value
1890	[1]	19	[1]	[1]	1915	629	101	1,556	5
1895	[1]	13	[1]	[1]	1916	753	120	2,464	14
1900	[1]	24	[1]	[1]	1917	795	142	5,188	40
1905	[1]	42	[1]	[1]	1918	721	154	6,727	50
1906	389	47	[1]	[1]	1919	746	161	8,370	64
1907	407	54	[1]	[1]	1920	798	196	9,161	72
1908	402	55	[1]	[1]	1921	662	175	10,713	62
1909	481	63	[1]	[1]	1922	762	222	12,044	73
1910	509	71	[1]	[1]	1923	1,007	240	19,434	77
1911	513	75	177	0.5	1924	1,142	254	22,235	82
1912	562	85	288	1	1925	1,189	265	26,845	120
1913	582	88	573	2	1926	1,313	299	32,454	136
1914	592	94	1,016	3	1927	[1]	[1]	[2] 38,752	[1]

[1] Not available.
[2] Preliminary estimate.

Source: Bureau of Mines, Department of Commerce.

Figures for the natural-gas industry in 1927 are not yet available, but, according to reports received by the Bureau of Mines from producers and distributors, 1,313,000,000,000 cubic feet of natural gas were produced and delivered to consumers in the United States in 1926. This represents an increase over 1925 of 10 per cent. (Table 51.)

Domestic or household consumers used 22 per cent of the total consumption of natural gas in 1926, and industrial concerns 78 per cent, indicating a growth in the proportion consumed by the latter. This is accounted for by the fact that the majority of the gas lines recently built have been located in relatively sparsely settled sections of the country and receive the major portion of their revenue from large industrial plants at the terminus. This should not be construed to mean that the consumption of natural gas for domestic purposes is on the decline, for in 1926 there were 3,731,000 domestic consumers as compared with 3,580,000 in 1925. California and Texas each recorded an increase of about 70,000 in number of domestic consumers and far surpassed the other States in this respect.

Prices paid for natural gas were in general higher in 1926 than in 1925, the value per thousand cubic feet at the well rising from 9.4 to 9.5 cents and at points of consumption from 22.3 to 22.8 cents.

The tendency to extract the greatest possible amount of natural-gas gasoline from natural gas before consumption of the gas was very marked in 1926. A total of 1,206,300,000,000 cubic feet of natural gas was treated for the recovery of natural-gas gasoline in 1926, which was equivalent to 92 per cent of the total production. In 1925 the proportion treated was 88 per cent.

Table 52.—Natural Gas

Item	1920	1921	1922	1923	1924	1925	1926
Consumption (million cubic feet):							
Domestic	286,001	248,334	254,413	277,050	285,152	272,146	289,175
Industrial—							
For carbon black	40,599	50,565	53,629	109,096	156,514	140,366	130,321
Field use	202,108	182,305	197,850	343,076	393,437	423,524	478,188
All other	269,502	180,848	256,654	277,745	306,379	352,403	415,169
Treated for natural-gas gasoline (million cubic feet)	496,431	465,087	545,139	875,711	1,016,276	1,040,390	1,206,300
Value at points of consumption (thousands of dollars):							
Domestic consumption	109,302	110,337	126,902	142,317	154,075	152,494	167,940
Industrial consumption	86,892	64,280	94,633	97,678	99,755	112,690	131,185
Average value per 1,000 cubic feet (cents):							
At wells			11.1	10.0	9.3	9.4	9.5
At points of consumption—							
Domestic	38.2	44.4	49.9	51.4	54.0	56.0	58.1
Industrial	17.0	15.5	18.6	13.4	11.6	12.3	12.8
Number of domestic consumers (thousands)	2,615	2,631	3,015	3,234	3,443	3,508	3,731
By-products:							
Natural-gas gasoline (thousand barrels)	9,161	10,713	12,044	19,434	22,235	26,845	32,454
Value (thousand dollars)	71,788	61,815	72,711	77,268	82,233	120,383	136,412
Carbon black (thousand pounds)	51,300	59,800	67,800	138,300	186,872	177,417	180,576
Value (thousand dollars)	4,032	5,446	5,820	11,692	11,565	9,640	9,939

Source: Bureau of Mines, Department of Commerce.

The total consumption of natural gas (including residue gas from natural-gas gasoline plants) by industrial users in 1926 amounted to 1,023,678,000,000 cubic feet, an increase over 1925 of 12 per cent. This increase resulted from record consumption for field use, such as drilling, pumping, etc., and for other industrial uses, including gas burned in the manufacture of carbon black.

The rank of the three chief gas-producing States was unchanged in 1926. Oklahoma, which ranks first, recorded a 15 per cent gain in output; California, which ranks second, a 9 per cent gain; but production in West Virginia, the next ranking State, showed a slight decrease. Texas registered a material gain in output and ranked fourth in size of production.

Table 53.—Natural Gas Production and Consumption, by States

[Quantities in millions of cubic feet]

State	Production			Consumption			Average value in 1926 (cents per 1,000 cubic feet)	
	1921	1925	1926	1921	1925	1926	At well	At consuming points [1]
Total	**662,052**	**1,188,571**	**1,313,019**	**662,052**	**1,188,439**	**1,312,853**	**9.5**	**22.8**
Arkansas	4,260	41,878	43,566	10,637	51,543	52,630	4.6	13.4
California	75,942	187,789	204,915	75,942	187,789	204,915	8.2	17.3
Illinois	2,646	4,165	3,808	2,630	4,165	3,808	20.0	22.7
Kansas	15,717	26,917	38,095	26,172	48,684	61,142	7.6	23.5
Kentucky	4,820	10,770	10,410	13,667	18,601	18,126	9.2	33.8
Louisiana	58,004	152,620	157,423	53,027	148,000	148,886	3.1	4.6
Missouri	4	34	1	4,467	5,372	5,819	10.0	85.9
New York	6,583	6,210	7,027	15,541	16,503	17,864	31.8	64.1
Ohio	47,412	43,235	47,363	106,051	111,969	115,719	18.5	57.0
Oklahoma	124,058	249,285	286,421	100,903	209,458	244,995	8.0	13.6
Pennsylvania	86,144	101,632	107,089	100,615	119,475	125,836	23.4	45.1
Texas	44,504	134,872	175,392	51,341	142,485	187,341	5.7	16.4
West Virginia	174,921	180,345	180,223	81,509	74,250	72,784	13.6	25.2
Wyoming	15,608	45,539	46,567	15,608	44,427	45,605	4.7	9.8
All other [2]	1,429	3,280	4,719	3,942	5,718	7,385	12.5	31.3

[1] Based on consumption figures. Average value of production is different in States which pipe gas to other States.

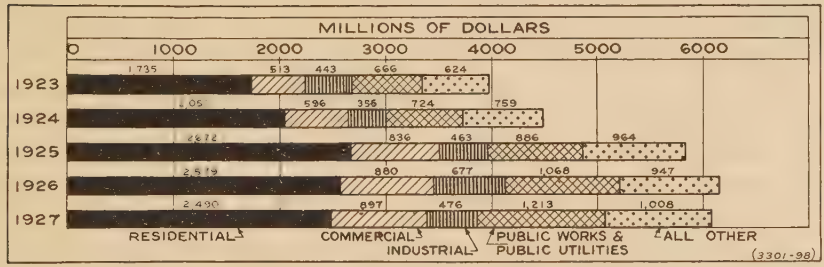
[2] Figures for 1921 include Colorado, Indiana, Iowa, Maryland, Michigan, Montana, North Dakota, Oregon, South Dakota, and Tennessee; for 1925, also Alaska and New Mexico, but not Oregon and Maryland (for consumption only); for 1926, also Alaska and New Mexico, but not Iowa, Oregon, and Maryland (for consumption only).

Source: Bureau of Mines, Department of Commerce.

CONSTRUCTION

SUMMARY.—The volume of building construction during the year 1927 was slightly less than the record-breaking totals of 1925 and 1926. Construction of highways and other public works, however, was the largest on record, and the total value of contracts awarded was only slightly below the high record of 1926. Industrial and residential buildings were the only types of construction which showed declines. These changes were reflected in building-material movements. The apparent consumption of Portland cement, used to a large extent in road construction, increased about 4.7 per cent compared with 1926. Shipments of fabricated steel, on the other hand, declined 7.6 per cent, and

Chart I.—VALUE OF CONSTRUCTION CONTRACTS IN 36 STATES, BY PRINCIPAL CLASSES



lumber and a number of other materials used in construction of buildings were also apparently in smaller demand.

Contract awards amounting to $6,084,000,000 were reported by the F. W. Dodge Corporation for all types of construction in 36 States, a decrease in value of about 1 per cent from 1926. The floor space of buildings (as distinguished from roads and other public works) declined 4 per cent from 1926 and 9½ per cent from 1925. The value of building permits granted in 168 cities was 11 per cent lower than in 1926, while contracts awarded for leading classes of work not covered by building permits increased 15 per cent, as reported by the Engineering News-Record. Builders continued to adjust the rate of construction activity to the available supply of labor, equipment, and materials, with resulting stability and reasonably good seasonal distribution of work.

Wholesale prices of building materials averaged 6 per cent lower than in 1926 and in December were at the lowest level since April, 1922. Indexes of construction costs showed smaller declines because prevailing wage rates were well sustained. Retail prices for frame-house materials averaged 4 per cent lower than in 1926.

POSITION AND CHARACTER OF THE INDUSTRY

It is only recently that the building of houses and construction of buildings, roads, canals, bridges, railroads, harbor works, subways,

tunnels, water-supply systems, and other work that produces a more or less fixed structure or alteration of the natural topography have been clearly recognized as a single industry. The importance of the construction industry is hard to overemphasize. In value of product it ranks very much above the automobile industry, the largest manufacturing industry, and about on a par with railway operating receipts. Variations in construction activity from year to year have a large share in determining the prosperity of other major industries, such as railways and lumber mills. Construction affects scores of manufacturing industries and bears some relation to retail trade and to the individual incomes of practically every family in the country.

Existing construction underlies the whole economic organization of the country. The production of manufacturing industries is carried on mainly in buildings, of course, but depends even more on the physical network of railways, highways, telephone and telegraph systems, and lines for the transmission of power and water, all of which are in large measure the products of construction. Living standards of the people depend very largely on the character of dwellings; on the availability of water, sewers, gas, and electricity; on the accessibility of varied recreational facilities; and on the streets and roads which enable them to get from place to place. There is a measurable relation between the character of dwellings and health. The schools require a great number of buildings in order to do their work effectively.

The volume and character of new construction is of great importance. The million and a half increase in population each year requires new dwellings, increased manufacturing facilities, and increased public utilities and other types of construction. Structures worn out or destroyed must be replaced. If living standards are to improve and people are to occupy better houses continued large construction programs are needed. Some types of construction add to the productivity of industry. In general, economic progress depends largely on the Nation's devoting a due proportion of its energies to construction.

Probably half the structures in the United States to-day, measured in value, are less than 30 years old, and another 30 years hence a backward look to the present may show a similar situation.

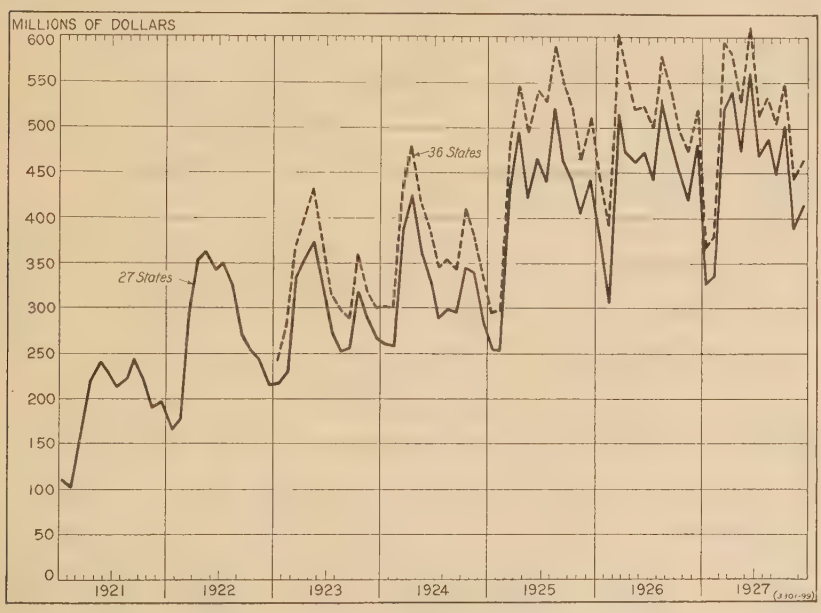
Measurement of Building Activity.

Construction activity is most properly measured in terms of employment of men and equipment and consumption of materials. Since few statistics covering these points are available, those showing contracts awarded and building permits must be used very largely instead. The figures as to contracts probably include all important buildings and engineering projects within the territory specified, but

stop short of small buildings on farms; they cover a sufficient proportion of the country to be fairly representative of the total.

Building-permit figures do not include street paving and some other kinds of engineering projects within cities nor construction outside of cities. The valuation given in building permits is only estimated, and a person is under no obligation to complete a building for which he has taken out a permit. In times of sudden depression work never materializes under many of the permits granted, while a sudden change in building costs may bring the actual expenditure considerably above or below the figure in the permit.

Chart II.—VALUE OF CONSTRUCTION CONTRACTS IN 27 AND 36 STATES



Actual construction work fluctuates much less sharply (apart from seasonal influences) than the monthly statistics for building permits or contracts awarded. Great activity in building may continue for some time after a marked falling off in these indicators.

CONSTRUCTION ACTIVITY

The actual volume of construction activity as shown by consumption of materials was probably slightly under that during 1926, although a direct comparison is difficult in view of shifts between classes of work. Contracts awarded in 36 States, as reported by the F. W. Dodge Corporation, were valued in 1927 at $6,084,000,000, compared with $6,152,000,000 in 1926 and $5,822,000,000 in 1925.

Table 1.—Construction Contracts Awarded in 36 and 27 States

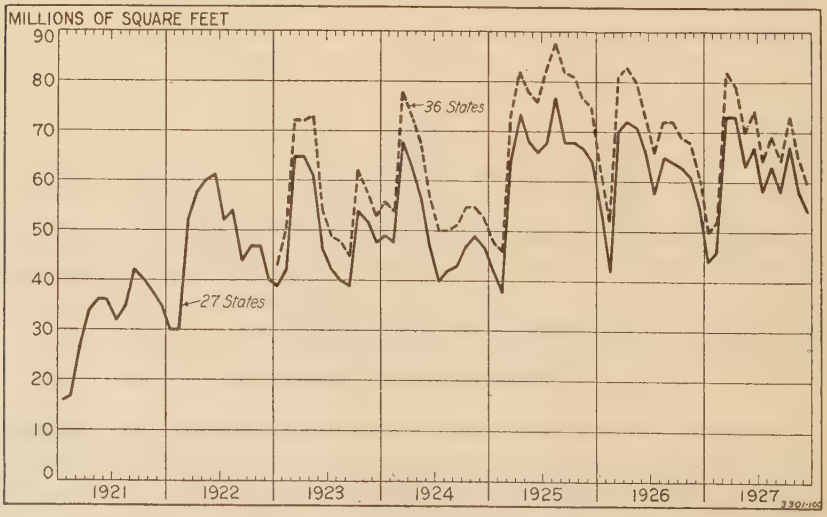
[Value in millions of dollars, floor space in millions of square feet]

Year	36 States—total		27 States					
			Total, all classes		Industrial		Residential	
	Value of construction	Floor space of buildings	Value of construction	Floor space of buildings	Value of construction	Floor space of buildings	Value of construction	Floor space of buildings
1915	(1)	(1)	940	(2)	107	64	418	228
1916	(1)	(1)	1,357	(2)	183	97	483	218
1917	(1)	(1)	1,618	(2)	248	109	355	151
1918	(1)	(1)	1,689	(2)	482	181	305	104
1919	(1)	(1)	2,580	560	513	153	849	242
1920	(1)	(1)	2,533	402	589	128	566	138
1921	(1)	(1)	2,360	387	173	36	878	205
1922	(1)	(1)	3,353	574	325	66	1,347	311
1923	3,981	679	3,494	592	379	62	1,583	354
1924	4,486	699	3,880	601	285	41	1,843	371
1925	5,822	888	5,043	762	413	59	2,360	470
1926	6,152	838	5,422	741	592	68	2,339	450
1927	6,084	804	5,473	724	377	58	2,327	435

[1] No comparable data available. Figures for 36 States were not collected prior to 1923.
[2] Corresponding figures for floor space not available.
Source: The F. W. Dodge Corporation.

The 804,000,000 square feet of floor space in buildings represented in these contracts (exclusive of public works and utilities) were 4 per cent less than in 1926 and 9.5 per cent less than in 1925. The dis-

Chart III.—FLOOR SPACE COVERED BY BUILDING CONTRACTS IN 27 AND 36 STATES



tribution of contracts by months was about as usual, but the shifts among types of construction and between different regions of the country were more notable. Residential building contracts declined, both in value and floor space represented, for the second successive

year, while industrial building contracts were 30 per cent less than in 1926. All other classes of construction showed an increase, public works and utilities having the largest gain in value. The Engineering News-Record's reports of contracts awarded for public works of a type not ordinarily covered by building permits showed a 15 per cent increase in 1927 compared with 1926, while the value of building permits in 168 cities declined 11 per cent.

The increased engineering and road-building construction was in large measure responsible for a 5 per cent increase in apparent consumption of cement. Shipments or production of fabricated structural steel, face brick, paving brick, and other clay products, baths and other enameled plumbing ware, and lumber indicated declines ranging up to 10 per cent. Changes in distributors' stocks might have affected these percentages one way or the other. Shipments of prepared roofing showed a 6 per cent increase over 1926. Consumption of practically all building materials was greater, however, than in 1924 or than in any other year during the preceding decade and the physical volume of total construction was measurably above any year prior to 1925.

Table 2.—Construction Contracts Awarded in 36 States, by Months

Period	Value of construction (thousands of dollars)				Floor space of buildings [1] (thousands of square feet)			
	1924	1925	1926	1927	1924	1925	1926	1927
Total	4,485,791	5,822,240	6,151,994	6,083,950	699,320	887,550	838,430	803,546
January	301,952	296,473	443,373	368,930	55,857	47,632	62,341	50,111
February	299,929	299,260	391,723	381,286	54,410	46,179	52,244	51,788
March	433,340	480,916	602,800	595,874	77,803	73,269	81,421	81,933
April	480,097	546,971	552,253	583,766	72,695	81,843	82,808	79,274
May	419,273	496,024	520,707	530,762	68,332	78,290	79,819	69,882
June	387,521	540,610	523,011	612,111	56,699	76,273	73,352	73,812
July	347,184	529,000	501,380	513,926	49,673	81,772	65,688	64,444
August	354,443	589,690	579,046	534,639	49,696	88,146	71,589	69,166
September	344,316	548,217	544,528	505,830	51,293	81,708	71,535	64,145
October	410,091	519,528	499,366	549,152	54,616	81,051	68,740	73,468
November	379,660	464,683	473,700	443,507	54,924	76,715	67,663	65,325
December	327,986	510,868	520,108	464,167	53,321	74,671	61,229	60,197

[1] Does not include floor space for public works and public utilities.
Source: The F. W. Dodge Corporation.

Actual construction activity, although still seasonal, was distributed about as evenly throughout the year as in 1924, 1925, or 1926. The past four years represent an improvement in this respect over those immediately preceding, according to studies made by the Division of Building and Housing of the Department of Commerce. Operations reached their highest point from June to October and held up well during November and December.

Total Value of Construction.

Statistics on construction contracts awarded are available since 1925 for 37 States, which include 90 per cent of the total population.[1] The value of contracts in these States in 1927 was $6,303,000,000. At the same rate the total for the entire country would aggregate more than $7,000,000,000. In addition there is a certain amount of work for which no contracts are let, which would probably further increase the total without including ordinary maintenance and repair work, which involves the employment of building trades workers.

Table 3.—Construction Contracts Awarded in 36 States, by Classes and Districts [a]

NOTE.—Comparative figures for the Texas district for 1925, were: Value $185,357,900, floor space 36,857,600, square feet; 1926 value $232,411,800, floor space 38,690,700 square feet; and 1927, value $219,105,000, floor space 37,376,500 square feet. These are not included in the total for the 36 States.

Year and class	36 States	New England	New York and Northern New Jersey	Philadelphia	Pittsburgh	Southeastern	Chicago-St. Louis	Minneapolis
	Value (in thousands of dollars)							
Total all classes:								
1923	3,981,314	329,839	1,070,487	365,482	594,093	487,196	1,006,882	127,336
1924	4,485,791	352,195	1,336,123	477,746	578,555	606,255	1,046,586	88,331
1925	5,822,240	477,181	1,601,329	552,318	828,912	779,212	1,488,060	95,229
1926	6,151,994	441,583	1,775,061	689,414	741,368	730,317	1,672,133	102,118
1927	6,083,950	412,767	1,684,446	721,148	758,135	610,789	1,812,849	83,816
1927								
Residential	2,489,588	185,325	823,698	292,172	249,594	162,646	746,039	30,115
Commercial	897,170	53,808	278,509	108,010	85,179	62,745	296,669	12,250
Industrial	475,616	31,361	63,460	58,856	80,787	98,854	135,725	6,572
Educational	368,803	45,549	77,329	46,328	51,672	45,024	95,626	7,275
Public works and public utilities	1,213,253	50,079	280,059	128,182	212,093	187,808	337,170	17,861
All other	639,521	46,645	161,391	87,602	78,809	53,712	201,620	9,743
	Floor space (in thousands of square feet) [b]							
Total all classes:								
1923	678,565	61,607	204,073	69,295	81,150	86,590	153,954	21,897
1924	699,320	62,912	219,427	74,070	77,757	98,404	152,419	14,331
1925	887,550	82,323	251,363	96,005	96,752	125,404	218,654	17,049
1926	838,430	70,639	251,316	96,850	86,227	97,159	220,290	15,949
1927	803,546	62,581	223,007	96,008	86,105	79,891	243,183	12,771
1927								
Residential	474,279	39,211	146,836	56,717	46,388	39,423	138,845	6,860
Commercial	133,142	8,508	38,285	15,636	13,451	14,203	40,718	2,342
Industrial	68,094	4,419	10,685	8,298	9,252	10,042	24,416	982
Educational	53,062	5,589	9,750	5,902	8,166	7,866	14,599	1,191
All other	74,970	4,854	17,449	9,457	8,850	8,358	24,605	1,397

[a] Boston district includes New England States. New York district includes New York and northern New Jersey. Philadelphia district includes eastern Pennsylvania, southern New Jersey, Maryland, Delaware, District of Columbia, and Virginia. Pittsburgh district includes western Pennsylvania, West Virginia, Ohio, and Kentucky. Southeastern district includes North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas, and Louisiana. Chicago district includes Illinois, Indiana, Iowa, Wisconsin, southern Michigan, Missouri, Kansas, Nebraska, and Oklahoma. Minneapolis district includes Minnesota, North Dakota, South Dakota, and northern Michigan.

[b] Excludes floor space for public works and public utilities.

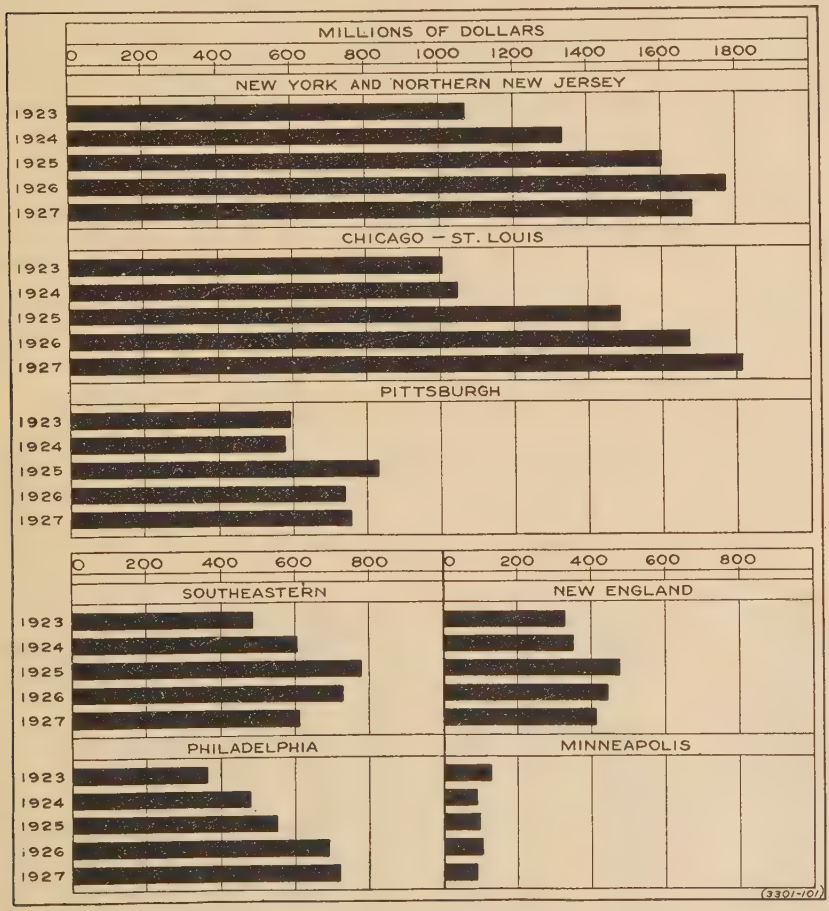
Source: The F. W. Dodge Corporation.

[1] The States not covered are Washington, Idaho, Montana, Oregon, Wyoming, Utah, Nevada, California, Arizona, New Mexico, and Colorado. Prior to 1923 figures for Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, and parts of Kansas and Nebraska were not compiled, therefore figures can be given for comparison with earlier years only for 27 northern and eastern States.

Construction by Regions.

Fluctuations in building activity are much greater from year to year in individual cities and for States and regions than for the country as a whole. The group of States designated as the Chicago-St. Louis district showed an increase in value of contracts awarded in 1927 compared with 1926 of 8 per cent, and thus surpassed the total

Chart IV.—VALUE OF CONSTRUCTION CONTRACTS IN 36 STATES, BY DISTRICTS



in the New York and northern New Jersey district. The latter district showed a 5 per cent decline, the first setback since 1918. The southeastern district, which includes Florida, the Minneapolis, and the Duluth districts, also showed declines, while the Philadelphia and Pittsburgh districts showed increases of 5 per cent and 2 per cent, respectively.

Residential construction amounted to 49 per cent of the total in the New York district and 45 per cent in the New England district.

Both public works and utilities were especially prominent in the southeastern and Pittsburgh districts, constituting more than one-fourth of the total.

Building Operations in Leading Cities.

New York again in 1927 issued much the largest value of permits of any city, its total being greater than that of the next six cities combined. Chicago retained its place as second city by a wide margin, with Detroit again in third place. Los Angeles moved up to fourth place, with Philadelphia close behind. The greatest percentage increases over 1926 among the larger cities were in Newark, Buffalo, and Boston. Most of the leading cities showed decreases in value of permits; the largest percentage decreases were reported by Washington, Baltimore, and Cleveland.

Building permits in 168 identical cities in 1927 were valued at $3,163,000,000, compared with $3,574,000,000 in 1926, and $3,793,000,000 in 1925. The decline of 11 per cent in value of permits in these cities at a time when the total value of contracts awarded decreased only 1 per cent is partly explained by the relative increase in public utilities and public works construction which is not ordinarily included in building-permit statistics.

Table 4.—Value of Building Permits Issued in Leading Cities [1]

City	Value of building permits in thousands of dollars								1927 per cent change from 1926
	1913	1921	1922	1923	1924	1925	1926	1927	
New York	162,759	442,285	645,176	789,265	836,044	1,020,605	1,039,671	880,333	−15.3
Chicago	89,668	133,028	229,853	334,164	308,911	373,804	376,808	365,065	−3.1
Detroit	30,434	58,086	93,615	129,720	160,548	180,133	183,721	145,556	−20.8
Los Angeles	31,642	82,761	121,207	200,133	150,148	152,646	123,006	123,027	[2]
Philadelphia	35,126	41,951	114,191	128,227	141,403	171,034	140,093	117,591	−16.1
Boston	22,780	24,058	57,497	40,676	53,032	70,718	51,484	60,987	+18.5
Newark	16,318	18,704	28,361	35,756	41,756	39,607	41,198	51,452	+24.9
San Francisco	21,037	21,716	45,147	46,348	57,603	50,093	57,154	46,449	−18.7
Cleveland	22,543	86,680	54,351	72,450	62,980	67,916	61,777	45,481	−26.4
St. Louis	15,340	14,502	24,980	41,352	39,766	55,057	42,739	41,417	−3.1
Washington	10,499	26,436	50,266	50,754	48,090	65,490	64,970	39,263	−39.6
Milwaukee	13,648	19,417	25,141	34,110	37,442	31,477	33,814	37,748	+11.6
Pittsburgh	15,471	23,477	31,072	33,426	32,155	52,272	43,790	37,111	−15.3
Buffalo	13,300	19,675	25,853	29,880	28,402	26,774	27,413	33,073	+20.6
Yonkers	[3]	4,598	8,532	10,544	13,289	19,899	25,644	32,586	+27.1
Cincinnati	7,543	15,261	25,596	23,365	23,572	31,970	29,257	30,570	+4.5
Seattle	9,321	12,809	19,624	22,951	27,212	30,627	34,218	29,070	−15.0
Portland	12,957	14,819	22,334	25,215	29,219	38,476	32,589	28,973	−11.1
Fort Worth	[3]	4,486	7,022	8,475	11,031	8,434	19,402	28,484	+46.8
Baltimore	14,054	37,017	40,452	38,946	46,664	45,458	42,456	28,438	−33.0
Total, 168 cities	[3]	1,665,666	2,550,263	3,107,984	3,225,847	3,793,169	3,573,747	3,162,941	−11.5

[1] Includes new residential and nonresidential buildings and repairs, alterations, and additions to old buildings.
[2] Increase of less than one-tenth of 1 per cent.
[3] Not available.

Sources: Bureau of Labor Statistics, Department of Labor, except 1913, which is from Geological Survey, Department of the Interior, for all cities except New York, which is from the American Contractor. Total for 168 cities from the Federal Reserve Board.

Distribution of Construction by Classes.

Residential construction, which was 41 per cent of the value of all construction contracts reported by the F. W. Dodge Corporation in 1926, continued to be the largest single item in the building program, although it was relatively less important than in any of the four years preceding. Commercial or business building contracts in 1927 represented about 15 per cent of the total, slightly above any other year since 1920. Industrial building declined to 7.8 per cent of the total, a slightly lower figure than in any of the years immediately preceding. Public works and utilities contracts increased to nearly 20 per cent of the total and were relatively more important than in any year since 1921. Of the remaining groups of construction educational buildings accounted for 6.1 per cent of the total, social and recreational for 4.2 per cent, hospitals and institutions for 2.6 per cent, and religious and memorial construction for 2.5 per cent.

Table 5.—Relative Value of the Several Classes of Construction Contracts

Class	Per cent of total value—27 States									Per cent of total value—36 States		
	1919	1920	1921	1922	1923	1924	1925	1926	1927	1925	1926	1927
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Residential	32.9	22.3	37.2	40.2	45.3	47.5	46.8	43.5	42.5	45.9	41.9	40.9
Commercial	15.7	16.6	14.3	14.8	12.8	13.5	14.2	14.4	15.3	14.4	14.3	14.8
Industrial	19.9	23.3	7.3	9.7	10.8	7.3	8.2	10.9	7.0	7.9	11.0	7.8
Public works and utilities	19.5	22.4	19.5	16.8	16.0	14.9	14.0	15.8	18.7	15.2	17.4	19.9
Educational	4.6	6.8	10.3	9.0	7.8	8.2	7.3	5.9	5.9	7.1	6.0	6.1
Hospitals and institutions	1.5	1.9	3.0	2.6	1.8	2.5	1.9	2.2	2.7	1.9	2.1	2.6
Public buildings	.5	1.1	.9	1.0	.5	.7	.7	.8	1.0	.8	.9	1.1
Religious and memorial	1.5	1.6	2.6	2.6	2.1	2.5	2.5	2.3	2.4	2.5	2.4	2.5
Social and recreational	3.2	3.6	4.6	3.3	2.9	2.8	4.3	4.1	4.4	4.2	3.9	4.2
Military and naval buildings	.7	.5	.3	.1	.1	.1	.1	.1	.1	.1	.1	.1

Sources: Division of Statistical Research, Bureau of Foreign and Domestic Commerce, based on data furnished by the F. W. Dodge Corporation.

Residential Construction.

The total floor space of residential construction for which contracts were let in 36 States was 474,000,000 square feet, about 5 per cent under the amount in 1926 and 13 per cent under the amount in 1925. The value of these contracts was $2,490,000,000, a decrease of 3.5 per cent from 1926.

Figures compiled by the United States Bureau of Labor Statistics for 257 identical cities showed a decrease of 56,000 in number of families provided with new dwellings for which permits were issued, compared with 1926. The total figures in this compilation for the past five years are as follows: 454,000 in 1923, 443,000 in 1924, 491,000 in 1925, 462,000 in 1926, and 406,000 in 1927. The same compilation indicated that the proportion of families accommodated in new single-family dwellings in these 257 cities decreased from 46

per cent in 1925 to 41 per cent in 1926 and 38 per cent in 1927. The proportion accommodated in new two-family dwellings, including those with stores attached, decreased from 17½ per cent in 1925 to 14 per cent in 1926 and 13½ per cent in 1927. The accommodations in multiple-family dwellings increased from 36 per cent in 1925 to 45 and 48 per cent in 1926 and 1927, respectively.

Table 6.—Construction Contracts Awarded by Classes

NOTE.—The value of military and naval buildings for 36 States in 1927 was $8,855,200 and the floor space amounted to 1,742,700 square feet.

[Values in millions and tenths of millions of dollars; floor space in thousands of square feet]

Year	Total	Residential	Commercial	Industrial	Public works and utilities	Educational	Hospitals and institutions	Public buildings	Religious and memorial	Social and recreational
27 STATES										
Value of construction:										
1919	2,579.9	849.2	405.7	512.9	502.0	119.5	39.2	13.4	37.5	83.6
1920	2,533.2	566.1	419.7	589.0	566.3	172.3	47.5	26.6	41.4	91.1
1921	2,360.2	877.9	338.0	173.3	459.4	243.7	70.1	22.3	60.4	108.8
1922	3,352.7	1,347.2	496.3	325.0	562.2	303.3	86.6	32.4	86.1	110.0
1923	3,494.1	1,582.8	446.1	378.8	557.4	272.5	62.0	19.2	72.0	100.3
1924	3,879.5	1,842.5	522.2	285.1	577.3	317.1	98.3	28.6	96.3	109.8
1925	5,043.0	2,359.9	717.3	413.3	704.1	369.5	97.6	35.3	124.7	216.2
1926	5,421.7	2,338.8	784.1	592.3	861.3	321.1	120.8	44.3	127.9	223.5
1927	5,473.1	2,326.9	834.4	376.8	1,025.4	323.8	149.0	56.8	132.3	239.8
Floor space of buildings:										
1919	560,219	241,880	110,884	153,268	----	22,979	6,821	2,066	5,334	15,175
1920	401,794	137,524	82,434	127,830	----	26,278	6,277	2,732	5,063	12,360
1921	387,229	204,575	65,235	35,771	----	40,583	10,683	3,056	9,201	17,466
1922	573,856	311,407	95,233	65,550	----	54,592	11,779	3,382	12,857	18,216
1923	591,976	354,257	92,788	62,205	----	44,332	9,997	3,123	9,284	15,435
1924	600,916	371,068	95,861	40,967	----	46,875	12,707	4,451	11,960	16,484
1925	762,146	470,207	124,064	58,719	----	51,204	12,020	4,703	13,814	26,476
1926	741,270	450,249	121,039	67,764	----	44,478	13,131	4,631	13,019	26,166
1927	723,655	434,856	118,940	58,052	----	45,197	16,967	5,983	13,187	28,974
36 STATES										
Value of construction:										
1923	3,981.3	1,734.5	512.9	443.2	665.5	320.6	78.1	23.3	89.1	110.6
1924	4,485.8	2,050.1	596.3	355.3	723.9	367.4	112.5	35.9	119.1	123.0
1925	5,822.2	2,672.0	835.7	462.7	885.7	413.2	108.5	46.7	148.0	243.6
1926	6,152.0	2,579.3	880.1	677.1	1,068.2	367.1	130.6	54.8	144.5	241.6
1927	6,084.0	2,489.6	897.2	475.6	1,213.3	368.8	158.8	66.1	150.1	255.7
Per cent change from 1926	−1.1	−3.5	+1.9	−29.8	+13.6	+.5	+21.5	+20.6	+3.9	+5.8
Floor space of buildings:										
1923	678,565	392,747	109,508	73,421	----	55,688	12,307	3,806	12,710	17,721
1924	699,320	422,285	113,040	50,033	----	58,241	15,155	5,492	15,514	19,201
1925	887,550	540,509	151,062	67,478	----	58,700	13,595	6,703	17,786	30,584
1926	838,430	498,927	142,357	78,790	----	52,207	14,451	6,127	15,518	28,961
1927	803,546	474,279	133,142	68,094	----	53,062	18,292	7,429	15,952	31,555
Per cent change from 1926	−4.2	−4.9	−6.5	−13.6	----	+3.6	+26.6	+21.3	+2.8	+9.0

Source: The F. W. Dodge Corporation.

Commercial Buildings.

Commercial or business buildings contracted for in 1927 increased about 2 per cent in value, but decreased 6½ per cent in square feet of floor space involved. The 19,900 such projects in 1927 averaged 6,700 square feet of floor space and $45,000 in value, compared with 7,600 square feet and $47,000, respectively, in 1926. The trend of

commercial building construction continued to be a subject of much discussion. Surveys in individual cities were believed to show overbuilding of office space in certain cases; it was maintained, on the other hand, that the desire of occupants to leave obsolete buildings should assure a continued demand for space in the newer and improved type of structures.

Table 7.—Residential Construction: Contracts Awarded in 36 States, by Months

Period	Value (thousands of dollars)				Floor space (thousands of square feet)			
	1924	1925	1926	1927	1924	1925	1926	1927
Year	2,050,093	2,671,970	2,579,327	2,489,588	422,285	540,509	498,927	474,279
January	170,186	127,232	183,279	160,029	37,945	26,791	37,694	29,757
February	142,079	136,023	171,297	158,004	31,348	27,850	31,853	31,025
March	227,461	220,872	252,425	240,312	49,838	45,534	49,139	47,938
April	219,139	256,414	257,965	259,841	47,536	51,453	51,756	47,731
May	185,419	231,182	236,640	212,500	39,755	48,101	48,783	38,228
June	161,443	208,583	224,771	233,193	34,101	42,988	44,154	42,038
July	128,072	224,713	177,646	180,840	25,454	48,081	34,999	34,803
August	148,232	263,485	213,624	201,743	27,998	52,096	39,829	39,354
September	143,706	250,417	219,910	196,501	28,236	46,790	40,183	38,046
October	166,199	262,726	218,982	236,870	32,143	52,238	41,814	45,608
November	191,319	240,280	223,305	207,308	34,779	50,309	41,691	41,002
December	166,839	250,044	199,483	202,447	33,153	48,280	37,033	38,747

Source: The F. W. Dodge Corporation.

Table 8.—Commercial Buildings: Contracts Awarded in 36 States, by Months

Period	Value (thousands of dollars)					Floor space (thousands of square feet)				
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
Year	512,914	596,343	835,673	880,102	897,170	109,508	113,040	151,062	142,357	133,142
January	36,332	38,393	67,372	67,514	77,829	6,797	7,778	10,919	11,191	11,037
February	34,698	47,124	38,825	65,319	65,937	8,185	9,420	7,467	8,768	8,799
March	51,233	64,433	54,871	104,113	106,925	11,266	11,455	11,772	15,431	14,712
April	53,826	49,724	63,969	87,895	78,084	11,473	9,615	12,261	14,981	12,259
May	59,510	56,380	80,280	63,006	69,183	11,718	11,232	14,183	12,045	12,499
June	44,727	56,556	92,152	66,064	82,543	9,597	9,308	13,713	12,015	12,395
July	40,875	49,346	67,166	65,347	81,130	8,457	8,993	13,153	10,704	12,485
August	37,457	41,151	105,849	78,236	73,698	8,484	8,361	17,295	12,438	10,880
September	44,142	43,316	80,172	95,352	56,937	8,499	8,751	13,262	14,171	9,723
October	35,133	55,969	55,912	61,219	77,726	8,786	9,664	12,228	11,141	11,821
November	32,594	55,255	61,336	56,403	41,893	7,689	10,038	11,421	9,616	7,451
December	42,388	38,696	67,770	69,634	85,286	8,558	8,424	13,389	9,856	9,082

Source: The F. W. Dodge Corporation.

Industrial Buildings.

The decline of 30 per cent in value and 13½ per cent in floor space of industrial buildings contracted for in 1927, compared with 1926, marked a return to an amount slightly above that recorded for the year 1925. The 5,311 industrial building projects in 1927 averaged 12,821 square feet of floor space and $90,000 in value, compared with 14,400 square feet and $121,000, respectively, in 1926.

The Engineering News-Record reported $321,000,000 worth of contracts for industrial buildings, valued at more than $40,000 each in 1927, approximately the same as in 1926. The value of contracts for each of the principal industrial groups is shown in the following statement:

Public utilities	$62, 984, 000
Textiles and clothing	51, 957, 000
Automotive	30, 800, 000
Machinery and mechanical equipment	23, 309, 000
Food products	22, 867, 000
Chemical process	18, 629, 000
Steel mills	11, 887, 000
Warehouses	11, 243, 000

The textile group showed a marked increase over 1926, owing to one contract of $37,500,000 for a rayon plant.

Industrial construction represents replacement of obsolete structures or adaptation of existing buildings to improved technical processes as well as additions to existing capacity. No standards are available to show what increment of new industrial building should be considered normal. It is certain that in recent years manufacturing industries in general have enlarged plant facilities to take care of the increased volume of production required, but there has not been the overbuilding that was prevalent in 1919 and 1920.

Table 9.—Industrial Buildings: Contracts Awarded in 36 States, by months

Period	Value (thousands of dollars)				Floor space (thousands of square feet)			
	1924	1925	1926	1927	1924	1925	1926	1927
Year	355, 269	462, 741	677, 106	475, 616	50, 033	67, 478	78, 790	68, 094
January	24, 769	19, 454	94, 415	27, 134	3, 795	4, 335	7, 245	3, 721
February	19, 060	20, 767	39, 087	40, 381	4, 096	3, 308	5, 256	4, 237
March	21, 763	53, 133	73, 776	47, 560	4, 744	4, 836	7, 033	6, 239
April	56, 361	46, 568	41, 524	40, 032	4, 994	6, 496	5, 277	9, 187
May	28, 901	27, 562	44, 560	42, 869	4, 625	5, 278	6, 785	6, 062
June	24, 968	25, 161	53, 725	32, 985	3, 294	3, 973	5, 610	5, 541
July	19, 664	58, 148	59, 703	29, 043	3, 017	5, 643	9, 209	5, 484
August	30, 380	22, 693	64, 049	40, 047	3, 967	4, 773	6, 918	5, 839
September	35, 222	43, 298	48, 836	48, 052	4, 216	8, 643	6, 290	5, 453
October	29, 033	63, 316	45, 740	50, 370	4, 478	7, 231	6, 613	5, 544
November	34, 373	53, 309	64, 552	49, 204	4, 101	7, 758	6, 613	6, 382
December	30, 776	29, 332	47, 140	27, 938	4, 705	5, 204	5, 941	4, 406

Source: The F. W. Dodge Corporation.

Public Works and Public Utilities.

Contracts for public works and public utilities in 36 States in 1927, reported by the F. W. Dodge Corporation, amounted to $1,213,000,000, compared with $1,068,000,000 in 1926. The Engineering News-Record reported that contracts awarded in the country as a whole for certain classes of engineering construction, other than buildings

and unclassified items, amounted to $933,000,000, an increase of 15 per cent. The greatest percentage increase was in contracts for bridges, which totaled $144,000,000, compared with $83,000,000 in 1926. Contracts for excavation, drainage, and irrigation increased more than one-half and most of the other groups showed gains. Waterworks, however, declined 13.7 per cent to the lowest total since 1922, and Federal Government contracts decreased 1 per cent. The opening to traffic of the New York-New Jersey vehicular tunnel, the subway program in New York, several improvements in the heart of Chicago, and the commencement of a number of important bridges were among the large operations of the year. The construction of 779 miles of new first-track railway line was completed, compared with 1,005 miles in 1926.

Table 10.—Public Works and Public Utilities: Contracts Awarded in 36 States, by Months

[Thousands of dollars]

Period	1924	1925	1926	1927	Period	1924	1925	1926	1927
Year	**723, 911**	**885, 732**	**1, 068, 239**	**1, 213, 253**	June	71, 784	92, 916	91, 809	147, 343
					July	71, 717	72, 743	109, 436	135, 581
January	28, 381	35, 462	52, 761	55, 638	August	65, 296	96, 000	124, 078	117, 053
February	37, 956	52, 865	64, 728	49, 358	September	52, 034	79, 668	90, 652	123, 254
March	44, 895	67, 931	97, 283	101, 717	October	101, 224	66, 007	100, 512	105, 932
April	88, 841	95, 432	76, 940	113, 246	November	57, 455	57, 035	49, 122	68, 716
May	68, 708	77, 759	92, 335	105, 220	December	35, 620	91, 913	118, 583	90, 194

Source: The F. W. Dodge Corporation.

Although construction of and contracts let for new highways were at record levels, the number of miles of Federal-aid highways completed during the year dropped to 8,260, compared with 9,400 in 1926 and 10,300 in 1925. There were under construction at the close of the year 8,500 miles under the Federal-aid program, compared with 10,050 at the end of 1926, 11,000 at the end of 1925, and 13,300 at the end of 1924. The Bureau of Public Roads estimates that total expenditures for rural road purposes, including new construction and maintenance, amount to more than a billion dollars annually.

The Census Bureau reports that 250 cities each with over 30,000 population expended more than $323,000,000 on outlays for streets, roads, alleys, bridges, and other highway structures within their fiscal years ending in 1926.

The Portland Cement Association reported that in 1927 contracts were let for 126,000,000 square yards of concrete pavement, which was 17 per cent more than in 1926 and about three-fifths more than in 1923. Of the total about 59 per cent was in rural districts, as compared with 57 per cent in 1926.

Table 11.—Engineering Construction: Contracts Awarded in the United States

NOTE.—Minimum cost of projects included in this table are as follows: Waterworks, excavation, dredging and irrigation $15,000; other public works, $25,000; industrial buildings, $40,000; commercial buildings (including hotels, apartments, schools, hospitals, and certain other classes of buildings) $150,000.

[Value in thousands of dollars]

Class	1913	1921	1922	1923	1924	1925	1926	1927	1927 per cent change from 1926
Total	601,406	1,193,514	1,556,589	1,904,040	1,999,290	2,559,443	2,853,847	3,253,766	+14.0
Waterworks	20,778	38,330	36,221	62,698	61,445	69,368	61,647	53,189	−13.7
Sewers	27,269	38,805	43,584	66,905	74,553	84,577	103,741	118,032	+13.8
Bridges	22,629	29,730	43,477	66,985	68,564	69,876	83,383	143,645	+72.3
Streets and roads	58,407	313,303	334,694	361,837	415,216	421,039	484,898	525,069	+8.3
Industrial building	41,101	117,995	198,177	281,621	204,969	227,616	311,665	321,315	+3.1
Commercial building	214,579	562,021	750,762	841,936	935,430	1,374,100	1,485,946	1,632,338	+9.9
Excavation, drainage, and irrigation	22,059	10,270	19,551	24,059	27,010	40,080	27,810	42,005	+51.0
Federal Government	41,751	28,604	43,552	47,940	38,885	34,272	50,262	50,763	−1.0
Unclassified	152,833	54,456	86,571	150,059	173,218	238,515	244,495	367,410	+50.3

Source: Engineering News-Record.

Public Buildings.

The value of public buildings for which contracts were awarded in 36 States increased 21 per cent over 1926 and was well above any other postwar year. It amounted, however, to only $66,100,000. There were reported 1,064 such projects, averaging 7,000 square feet of floor space and $62,000 in value. The Federal Government's program providing nearly $300,000,000 for new buildings and sites, to be spent over a 10-year period, $50,000,000 in the District of Columbia, and the remainder outside, has been mapped out. Actual construction under this program is to commence in 1928.

Table 12.—Educational Buildings: Contracts Awarded in 36 States, by Months

Period	Value (thousands of dollars)				Floor space (thousands of square feet)			
	1924	1925	1926	1927	1924	1925	1926	1927
Year	367,439	413,204	367,059	368,803	58,241	58,700	52,207	53,062
January	18,519	15,339	12,736	16,675	3,114	2,371	2,170	2,329
February	31,155	20,278	19,214	21,842	5,839	3,809	2,928	2,967
March	34,062	42,193	28,576	35,413	5,748	5,557	3,936	5,475
April	33,522	33,155	37,245	34,336	5,757	5,203	4,907	4,515
May	40,582	29,313	37,188	33,655	6,908	4,623	6,194	5,136
June	34,807	64,585	38,845	40,568	5,262	9,002	5,635	5,374
July	39,511	57,572	40,874	35,006	6,150	7,645	5,876	5,207
August	31,771	33,667	40,906	40,144	4,401	5,246	5,196	5,784
September	31,728	35,217	32,953	28,343	4,857	4,744	4,588	4,114
October	27,675	28,192	23,076	29,699	4,127	3,937	3,404	4,103
November	18,311	22,048	33,535	30,642	2,825	3,157	4,562	4,477
December	25,797	31,646	21,912	22,480	3,254	3,047	2,812	3,582

Source: The F. W. Dodge Corporation.

Educational Buildings.

The value and floor space of educational building contracts in 1927 for the 36 States were slightly higher than in 1926. The value approximated the average for the preceding four years, while the floor space was about 5 per cent under the average for 1923 to 1926. The $369,000,000 worth of such contracts under this heading were divided into 4,246 projects, averaging 12,497 square feet of floor space and $87,000 in value.

Other Buildings.

Contracts in the 36 States for social and recreational buildings increased 6 per cent in value and 9 per cent in floor space, compared with 1926, creating new high records in each case. The total amounted to $256,000,000 and included 2,750 projects, averaging 11,500 square feet of floor space and $93,000 in value, both averages being below the corresponding figures for 1926 and 1925.

Contracts for religious and memorial buildings increased about 4 per cent in value and 3 per cent in floor space in 1927. There were 2,552 projects of this type, averaging 6,250 square feet of floor space and $59,000 in value.

Hospital and institutional building contracts increased 22 per cent in value and 27 per cent in floor space, both totals being the highest on record. There were 1,140 such projects, averaging 16,000 square feet of floor space and $139,000 in value.

BUILDING COSTS

Building costs during 1927 were slightly lower than during 1926. Prices of materials dropped, while the tendency of published wage scales in the building trades was upward. Figures for contracts awarded showed a somewhat uneven tendency with regard to changes in average value per square foot of floor space, with a slight rise in the case of residential construction, the largest single class. The wholesale building material price index of the Department of Labor averaged 163 for the year, compared with averages of 173 in 1926 and 175 in 1925 and 1924. The average was the lowest since 1917, and prices in December were lower than in any month since April, 1922. The Department of Commerce retail price index for frame-house materials averaged 187 in 1927, compared with 195 in 1926, and ranged from the high of 191 in March to a low of 180 in November.

Since most construction is performed on the basis of contracts let before the work starts, contractors in submitting estimates take into account anticipated changes in cost. Hence, none of the indexes of building costs represents exactly the variations from month to month in cost to individual contractors or owners. An index for highly finished structures would vary decidedly at times from an

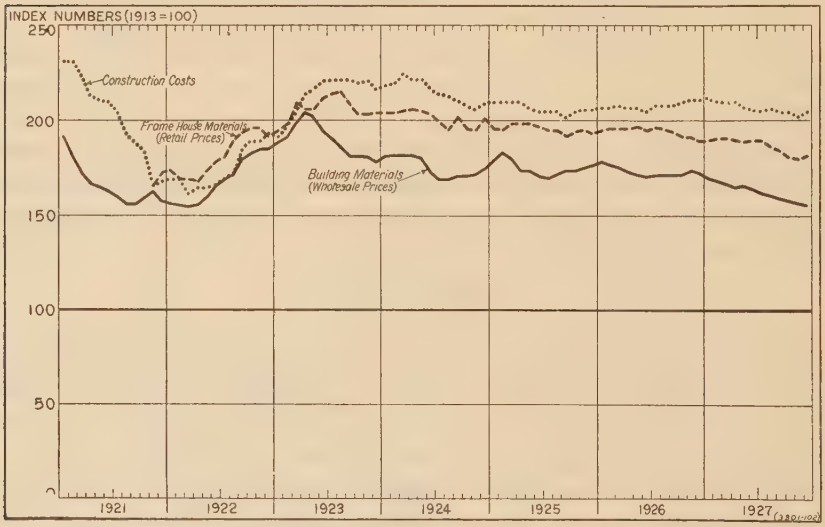
index for less pretentious buildings using cheaper materials and constructed largely with unskilled or semiskilled labor.

It is common to see marked changes in the cost of building attributed to single factors, such as labor or material costs. But a substantial part of what the owner of a structure must pay goes for the land, contractor's overhead and profit, financing charges during construction, and the architect's and real-estate men's fees, and some of these factors may vary materially from time to time and place to place.

LABOR

There were in general no unusual conditions with regard to employment conditions and demand for building-trades labor in 1927.

Chart V.—INDEX NUMBERS OF BUILDING-MATERIAL PRICES AND CONSTRUCTION COSTS



The maximum rate of building activity in many centers was limited during the summer months by the number of skilled workers available, but builders have become accustomed to adjusting their program of work to the available supply of mechanics. The volume of employment appears to have been reasonably well distributed throughout the year, although construction still ranks as a seasonal industry.

Labor Costs.

The rates of wages for building-trades workers, as stated in local trade agreements made during the year, showed a number of increases. No satisfactory index of labor costs of construction is available. Published wage scales frequently do not represent the wages actually paid, and the productivity of labor, as to which very little information

is available, should be taken into consideration in computing a true labor-cost index. Furthermore, the proportion of labor done by different trades varies greatly on different classes of buildings.

Table 13.—Index Numbers of Building Materials, Prices, and Construction Cost

Year, quarterly average, and month	(1) All commodity index	(1) Wholesale price indexes of—						(2) Construction costs	(3) Factory building costs	(4) Frame house materials, retail prices	(4) Brick house materials, retail prices
		All building materials	Lumber	Brick, common (average 82 yards)	Cement f. o. b. plant near Chicago	Structural steel	All other building materials				
1913	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-------	100.0	100.0
1914	98.1	92.0	91.6	98.7	91.2	77.8	95.1	88.6	100.0	-------	-------
1915	100.8	94.0	89.4	99.2	96.0	84.7	101.9	92.6	-------	-------	-------
1916	126.8	120.3	102.0	107.7	117.5	167.2	137.1	147.4	-------	-------	-------
1917	177.2	157.0	134.6	131.8	151.5	247.4	171.5	181.2	-------	-------	-------
1918	194.3	172.0	155.4	175.8	164.7	198.6	189.3	189.2	-------	-------	-------
1919	206.4	201.4	210.4	206.3	164.5	166.9	195.4	198.4	-------	-------	-------
1920	226.2	264.1	307.5	278.9	178.3	187.3	218.3	251.3	-------	-------	-------
1921	146.9	165.4	163.5	232.0	164.4	135.3	169.0	201.8	179.0	-------	-------
1922	148.8	168.4	183.4	201.7	159.3	114.8	155.9	174.5	170.0	181.6	185.6
1923	153.7	189.1	206.5	213.5	170.4	160.4	168.8	214.1	202.0	206.6	208.3
1924	149.7	175.1	182.9	212.8	172.3	148.0	166.9	215.4	198.0	201.3	203.4
1925	158.7	175.1	185.4	206.2	170.9	132.5	167.0	206.7	195.0	195.5	196.6
1926	151.0	173.4	185.3	204.8	163.2	129.7	162.9	208.0	197.0	194.6	194.8
1927	146.8	162.6	173.4	206.4	158.6	122.8	151.8	206.2	192.0	187.0	188.1
1925											
Jan.-Mar.	160.5	180.6	193.6	208.2	172.6	138.0	168.8	210.1	197.0	196.4	198.7
Apr.-June	156.3	172.9	182.3	207.5	173.1	133.5	164.6	207.1	194.0	197.6	198.2
July-Sept.	160.0	172.2	180.9	204.5	173.1	129.7	165.6	203.8	194.0	193.8	194.2
Oct.-Dec.	157.2	175.5	185.9	204.4	164.8	129.1	167.6	205.8	194.0	194.1	195.3
1926											
Jan.-Mar.	154.2	176.8	190.7	205.6	163.2	129.1	164.6	207.2	195.0	195.5	195.7
Apr.-June	151.7	172.0	184.7	204.7	163.2	126.9	160.5	206.4	199.0	196.2	196.8
July-Sept.	150.1	171.9	181.5	204.7	163.2	130.2	164.0	208.1	198.0	195.5	195.5
Oct.-Dec.	148.3	172.9	184.1	204.3	163.2	132.4	162.6	210.5	197.0	191.1	191.2
1927											
January	146.9	169.7	181.4	207.5	161.9	132.4	157.7	211.5	196.0	189.9	190.2
February	146.4	167.9	180.1	207.9	158.3	129.1	155.2	210.2	194.0	190.6	189.6
March	145.3	166.8	179.0	207.5	158.3	125.8	154.5	208.8	193.0	191.0	190.0
April	144.2	165.0	176.2	207.1	158.3	125.8	153.6	209.0	193.0	189.7	189.3
May	144.1	165.6	177.2	206.9	158.3	125.8	153.7	206.8	193.0	189.1	188.7
June	143.7	164.3	176.2	206.5	158.3	122.5	152.4	205.6	192.0	190.0	189.3
July	144.6	162.4	174.2	205.9	158.3	117.5	151.1	203.7	192.0	189.9	189.4
August	146.6	160.8	170.8	205.8	158.3	119.2	151.2	205.5	192.0	187.4	187.7
September	149.3	159.3	168.5	205.7	158.3	120.9	150.0	203.6	191.0	183.9	186.6
October	150.1	158.3	168.2	206.0	158.3	119.2	148.3	204.4	191.0	180.7	185.1
November	149.5	156.6	166.3	205.4	158.3	115.9	147.1	202.0	191.0	179.7	184.4
December	149.1	156.0	164.0	204.7	158.3	119.2	148.2	203.9	191.0	182.1	187.2

Sources: (1) Department of Labor; (2) Lumber, steel, cement, and common labor, Engineering News-Record; (3) Standard factory building, Aberthaw Co.; (4) Retail prices of building material in 45 cities, Department of Commerce.

National Board for Jurisdictional Awards. Apprenticeship.

The building trades department of the American Federation of Labor withdrew its participation in the National Board for Jurisdictional Awards in the Building Industries at the time of its annual convention in October, 1927. This board, which had been created in 1919, was established to decide disputes as to the allocation of work among the building crafts in cases not settled locally. It has rendered

125 or more awards and has greatly aided in reducing the number of jurisdictional strikes. The National Association of Building Trades Employers, the American Institute of Architects, and the Associated General Contractors decided to retain the organization in order to aid in enforcing the awards already made, and, if possible, to help in the creation of local machinery having the same general purpose.

The construction industry faces a problem in the training of competent building-trades workers. The large turnover of labor made necessary by variance in the type and volume of work on hand may make it difficult for a single firm to put apprentices through a regular course of training in the way in which a manufacturing establishment may do. Lack of teachers and teaching material makes it hard for boards of education or other bodies to give suitable classroom work and shop training to supplement that given by employers on the job.

Forms of agreement, however, have been worked out in a number of cases to make the conditions workable from the employer's point of view, at the same time offering apprentices good opportunity for steady work. The Federal Board for Vocational Education, several trade associations, and some of the unions are aiding in developing the subject matter and arrangement of courses of training, and have encouraged apprenticeship programs and instruction for semiskilled men in various cities with an increasing degree of success.

FINANCING

The financing of construction programs totaling $7,000,000,000 a year involves a vast number of transactions about which but little information is available. The sum is less than the annual volume of savings of the people of the United States, but very few individuals apply their savings directly to construction. There are families which save money until they have enough to pay for a house and there are corporations which construct new buildings out of surplus funds, but most buildings are paid for, in large measure, with borrowed money.

Mortgage bond companies issued about $270,000,000 worth of bonds to finance construction in 1926, compared with $350,000,000 and $400,000,000, respectively, in the two preceding years, according to reports by the Commercial and Financial Chronicle. Building and loan associations, which devote their resources very largely to lending to home owners, show the following growth in assets during five years: 1923, $3,942,940,000; 1924, $4,765,937,000; 1925, $5,509,176,000; 1926, $6,334,104,000; and 1927, $7,062,000,000. The amount of new loans by these associations was estimated at around $2,000,000,000 for the year 1927, and the greater part of this sum probably went directly or indirectly into financing new construction. Insurance companies' holdings of real-estate mortgages, other than

on farms, increased approximately $500,000,000 during the year, while the deposits of mutual savings banks, another important source of funds for lending on real estate, increased $500,000,000 during the year ended June 30, 1927. Passage of the McFadden Act in 1927 made additional funds available by permitting national banks to invest as much as one-half their savings deposits in realty loans for periods up to five years.

Hundreds of millions of dollars' worth of roads and other public works are financed each year through State and municipal bond issues, of which about $1,470,000,000 worth were floated during 1927. The tendency in recent years has been for States and municipalities to pay for a larger proportion of the costs of construction from current revenues.

The governments of States and of 250 cities with more than 30,000 population spent $966,000,000 from current revenues in 1926 for outlays, of which construction forms the major item. Expenditures from current revenues for outlays by the governments of States and by 146 identical larger cities for which comparable data are available have increased rapidly, as the following statement shows:

1919	$263, 000, 000
1922	489, 000, 000
1923	540, 000, 000
1924	682, 000, 000
1925	835, 000, 000
1926	850, 000, 000

The increased volume of new construction during recent years is apparently in reasonable proportion to the growth in savings. The average total value of construction reported for 27 States by the F. W. Dodge Corporation for the past three years increased approximately 113 per cent as compared with the average for 1919 to 1921. The combined additions to building and loan association assets, mutual savings bank deposits, and assets of mutual life insurance companies showed an increase of 111 per cent between the same two periods. Furthermore, the supply of funds for new investments appears to have remained ample, which would probably not have been the case if the value of new construction had been out of line with new savings.

The capital available for investment in buildings has been made much more mobile by the increased volume of lending through mortgage bonds of companies doing business over large areas and by more widely distributed lending on the part of life-insurance companies. A city or region undergoing a rapid development may not only borrow from the outside for putting up new buildings but by obtaining loans on existing structures from outside may release local capital to carry much or all of the speculative risk in the new enterprises.

The rate of interest at which a new building can be financed has a marked effect on its real cost to the owner. It is not uncommon to find variations in the cost of financing similar structures that are equivalent to differences of 10 to 20 per cent or more in building costs.

Of course, real-estate securities vary in degree of safety, ranging from those based on 50 per cent or less of the conservative valuation of land and building and guaranteed by a company of strong financial position to securities in which there is a considerable speculative element. It has been urged by some that the financing of new construction has been too easy and has encouraged the undertaking of projects in which there is too great an element of risk; on the other hand, there are complaints that financing charges for new construction of certain types have been in some cases unreasonably high. It appears that the facilities for financing the small home buyer above the amount which he can obtain on first mortgage are inadequate. The great majority of second mortgages on homes are handled by agencies other than the better-known financial institutions, and there is a large field for constructive development in this direction.

MARKET CONDITIONS

The effective demand for construction at any time is influenced not only by general conditions such as the supply of capital, interest rates, prices, building costs, and the general outlook toward the future, but by special conditions affecting one or more classes of construction. The ratio of rents to building costs for various classes of structures, the earning prospects of owners, the development of rapid-transit facilities in and around cities, the growth or shifting in location of certain industries, the development of transportation and terminal facilities for commodities, and the degree of prosperity of the leading industry in a given region may all have their effect.

The cessation of building of many types during the World War and the irregular operations of the two years following left the country behind in its construction program. In 1921 the accumulated shortage of dwellings was variously estimated as equaling from one to three years' normal construction. The Division of Building and Housing of the Department of Commerce estimates that in the case of houses for families below the middle-income group this shortage has not yet been wholly made up. Surveys of vacancies in several cities and indexes in a few others of the number of rental advertisements indicate that at least for some classes of dwellings and other structures demands are being relatively better met than at any time since the World War.

In any case, however, housing conditions before the war are not an adequate measure of potential demand, in view of the general advance in standards of living. The average family now demands better

accommodations than it occupied in 1913; perhaps smaller, but containing more expensive features and equipment. The movement of families in moderate circumstances to more attractive surroundings in the outskirts and suburbs of cities, made accessible by the automobile and various forms of rapid transit, is characteristic. Practically all surveys of housing needs have indicated that the greatest demand at present is for single-family dwellings. Factors influencing the demand for business and industrial buildings have already been discussed.

The strong financial position of prospective builders, both of small-home builders and of big industrial corporations, public utility companies, railroads, and branches of the Government, is a powerful factor tending to maintain a substantial volume of building activity.

PROGRESSIVE CONSTRUCTION TENDENCIES

City Planning and Zoning.

Progress in planning of cities and regulating the location of buildings in accordance with a logical scheme was again notable in the year 1927. The losses from traffic congestion owing to failure to plan street systems with reference to traffic needs and those arising from the scrapping of physically sound buildings owing to blighting of home and business districts by structures and uses that should be located elsewhere have impressed on the people of American municipalities the need for comprehensive planning and zoning. The total number of zoned cities, towns, and villages increased to about 600 by the close of the year. These zoned municipalities comprise nearly three-fifths of the total urban population of the United States. Fifty-five of the 68 cities which in 1920 had a population of more than 100,000 have zoning ordinances in effect. Twenty-three States passed laws during the year defining the conditions under which municipalities within them may zone, and 29 States now have legislation based largely on the Department of Commerce standard State zoning enabling act permitting cities to zone. Zoning laws have now been enacted by 45 States and the District of Columbia, while in another State zoning has been held permissible under home-rule provisions of the State constitution.

The Department of Commerce standard city planning enabling act, prepared by the advisory committee on city planning and zoning, was published in March and was utilized in drafting legislation adopted in three States. The standard act covers such matters as the grant of power, the personnel, organization, powers and duties of planning commissions, platting regulations and their enforcement, the prevention of building in the bed of mapped streets, and the organization and powers of regional planning commissions. A

survey by the Division of Building and Housing of the Department of Commerce showed that at least 206 of the 287 largest cities of the country have established city planning commissions, and 244 smaller places having planning commissions make a total of at least 450 in the country as a whole at the end of 1927. The large number of cities having planning commissions shows a very general appreciation of the need for modern city planning. This increased interest in planning is helping arouse realization of the importance of by-pass highways around cities, adequate traffic arteries leading to important bridgeheads, and the construction of highway bridges. It also promises to put public works construction programs on a more orderly basis in accordance with long-time financial programs.

Building and Plumbing Codes.

Greater care is being exercised in the preparation and revision of building and plumbing codes, since their economic effect both upon the manufacturer and upon the cost of construction to the purchaser has become more widely appreciated. The practice of adoption by a municipality of a code which was merely a copy of one in effect in some other city has largely given way to a demand for codes based on scientific tests and drafted by experts, frequently from outside the city. For basic principles, code committees look to the standards of professional and scientific societies and to carefully drawn minimum requirements such as those prepared by the Department of Commerce building code committee. The recommendations of this body and of its subcommittee on plumbing have been utilized in the codes of over 120 cities as well as in a number of State codes.

Better Building.

Adherence to better standards of quality is recognized by many of the leaders in construction as one of the major problems before the industry. Extensive efforts have been made to inform the public with regard to standards of quality and workmanship in the hope of influencing the demand. The movement has the support of a considerable number of large lending institutions which are interested in the durability of the structures on which they loan funds. The American Construction Council and several other groups are endeavoring to work out means of encouraging builders generally to conform to good standards.

Building Practice and Research.

Progress in building practice and research into the properties and uses of building materials was characterized by wider use of established results and by a continuation of studies along many different lines. A number of steel-framed buildings and other structures were electrically welded instead of being riveted, and the results of the experience gained through these extensive trials served to create wider

interest in the method and its possible applications. Good practice in accurate proportioning of concrete appeared to be gaining. There was also continued emphasis on the economical use of materials in design and on economies through better scheduling of work.

Research along many different lines was intensified. The Bureau of Standards conducted an extended series of tests on the properties of brick and other types of masonry, including many fire tests of walls. It also carried out extensive tests of the properties of cement, methods of proportioning and testing, and the durability of concrete aggregates. Other investigations dealt with the properties of new types of glass designed to admit the ultra-violet rays in sunlight, which have valuable hygienic properties and which are excluded by ordinary window glass. Another study was made of the weathering of building stone. Many investigations of building materials were carried on with the cooperation of national trade associations or other groups. More than 30 associate workers were maintained by such bodies at the bureau during the year who were making tests having a direct bearing on building construction or maintenance.

Seasonal Stabilization of Building.

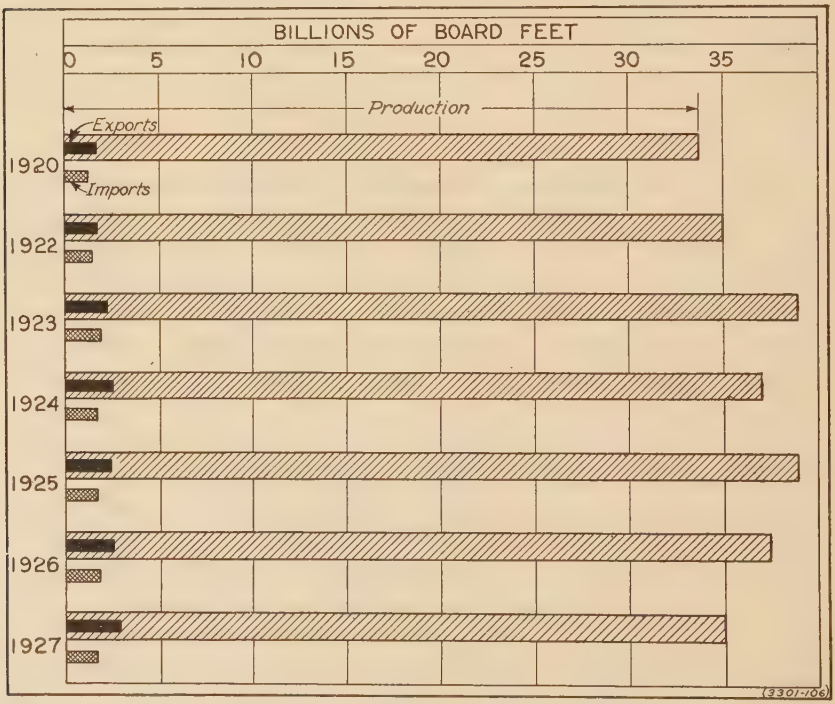
A more even distribution of building activity throughout the year has been one of the most important factors in eliminating waste in the construction industries during the past two or three years. The former condition, in which great activity was reached in June or July and extended only for two, three, or four months, resulted in widespread unemployment among building-trades workers during the remaining months, irregular operations on the part of most building-material manufacturing plants, and an uneven burden on the railroads. The assembling and analysis of facts by the Division of Building and Housing of the Department of Commerce, in cooperation with a committee of business and professional men representing the construction industries, has encouraged owners and contractors to plan their operations so that they will be adjusted to the available supply of labor and materials. Accordingly there has been less tendency among them to bid against each other for the services of workers during the most active period and a greatly increased amount of construction during the winter, spring, and later autumn months. The movement has been steadily making headway through local programs to stabilize building in various cities and through presentation of the subject by trade associations, conventions, and the press.

CONSTRUCTION MATERIALS

LUMBER AND AFFILIATED PRODUCTS

SUMMARY.—The production of lumber in the United States in 1927 was estimated by the National Lumber Manufacturers Association at 35,000,000,000 board feet, a decrease of 2,500,000,000 board feet from the estimated production in 1926. Prices for both softwoods and hardwoods for the year averaged slightly lower than those of the preceding year. Water-borne shipments of west coast lumber to the eastern States and from Washington and Oregon to California showed decreases. Total lumber exports were 11 per cent larger than those of

Chart I.—LUMBER PRODUCTION, EXPORTS, AND IMPORTS



1926, southern pine and oak making the chief gains. Exports of logs, ties, and other unmanufactured woods showed a substantial increase over the previous year. Imports of lumber, largely from Canada, were 8 per cent less than in 1926.

GENERAL POSITION OF THE WOOD-USING INDUSTRIES

According to the census of manufactures taken in 1925, lumber and its remanufactures ranked eighth among the 16 industrial groups in respect to value of products, which reached an aggregate value of

$3,689,000,000. This total value of output was about 1.5 per cent more than in 1923 and was very much larger than in any other earlier census year. (Table 1.) The average number of wage earners for the entire industry was slightly smaller in 1925 than in 1923, while there was an increase of about 4 per cent in the horsepower.

Table 1.—Lumber and Allied Products

Year and industry	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of product	Value added by manufacture
				In thousands of dollars			
The group as a whole:							
1914	43,452	865,009	3,176,145	446,777	765,573	1,615,780	850,207
1919	41,195	863,937	3,409,654	859,832	1,368,172	3,113,203	1,745,031
1921	21,393	703,309	(1)	670,421	1,197,465	2,456,608	1,259,143
1923	21,674	931,748	3,336,133	962,542	1,666,188	3,633,034	1,966,846
1925	21,922	921,145	3,472,770	978,375	1,724,984	3,688,553	1,963,569
Basic industries:							
1919	27,405	510,254	2,367,953	507,537	487,412	1,445,435	958,023
1921	10,233	392,756	(1)	323,977	386,881	930,015	543,134
1923	10,671	531,545	1,944,962	492,617	584,802	1,534,991	950,188
1925	10,286	504,711	2,064,631	473,085	593,935	1,468,427	874,492
Wood-reworking industries:							
1919	6,309	102,694	469,846	106,747	324,705	558,689	233,984
1921	5,118	91,924	(1)	110,717	298,050	518,386	220,336
1923	4,963	120,239	553,302	151,573	430,991	762,017	331,026
1925	5,527	127,519	659,953	164,481	431,397	778,051	346,654
Wooden-container industries:							
1919	2,803	65,415	185,599	57,774	172,708	290,985	118,277
1921	1,872	51,923	(1)	45,794	125,864	204,779	78,915
1923	1,872	62,121	200,457	58,271	154,804	265,501	110,697
1925	1,762	57,961	192,281	55,673	142,774	249,612	106,838
Furniture and related industries:							
1919	3,873	152,783	288,013	156,121	290,833	639,818	348,985
1921	3,444	134,886	(1)	157,207	278,880	605,990	327,110
1923	3,430	181,946	509,877	222,408	372,338	851,449	479,111
1925	3,597	195,522	434,038	244,789	417,868	950,596	532,728
Miscellaneous and allied industries:							
1919	805	32,791	98,243	31,652	92,514	178,276	85,762
1921	726	31,820	(1)	32,726	107,790	197,438	89,648
1923	738	35,897	127,535	37,673	123,252	219,076	95,824
1925	750	35,432	121,867	40,347	139,009	241,866	102,857
MAJOR INDUSTRIES, 1925							
Lumber and timber products	9,207	473,998	2,049,500	456,716	579,475	1,421,162	841,687
Turpentine and rosin	1,007	29,413	3,138	15,190	11,887	42,364	30,477
Planing-mill products not made in planing mills connected with sawmills	4,761	111,329	597,103	146,592	403,227	710,861	307,635
Boxes, wooden, except cigar boxes	824	34,834	143,519	33,765	86,391	152,295	65,904
Cooperage	553	11,483	30,758	12,908	44,176	67,735	23,559
Furniture	3,235	180,895	402,519	225,200	384,508	868,146	483,638
Refrigerators, ice	167	9,360	23,297	12,589	24,744	57,666	32,922
Caskets, coffins, burial cases, etc	326	11,479	29,164	14,057	32,771	70,413	37,642
Wood preserving	131	8,416	33,521	9,606	66,709	91,184	24,475

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

The chief decrease in the average number of wage earners and most of the increase in the total horsepower occurred in the basic industries. Of the basic industries group, lumber and timber products is much the most important, having products valued at $1,421,000,000. Table 2 indicates that the value of lumber and timber products in

1925, though smaller than in 1923, was about twice as large as before the war. Both the number of wage earners and the primary horsepower for this industry, however, were smaller than in the pre-war years, although the amount of horsepower in prime movers was 6 per cent larger than in 1923.

The furniture industry, including related products, ranks next in importance among the lumber group and in 1925 had a total value of output which exceeded $950,000,000, an increase of 12 per cent as compared with the preceding census year. The value added by manufacture and the total number of wage earners in this industry were also larger than in 1923, but there was a considerable decrease in the amount of horsepower.

Of the other large industries affiliated with lumber, wood reworking showed a slight gain in value of output, according to the 1925 census, while the value of production for the wooden-container industries was slightly smaller. The average number of wage earners was slightly larger and the primary horsepower was increased by one-fifth in the wood-reworking industries, whereas both the man power and the machine power employed by the wooden-container industries were smaller than in 1923.

The United States is the largest lumber-producing country, and it is estimated that it supplies over one-half of the world's demands. Other important lumber-producing countries are Canada, Finland, Sweden, Russia, Japan, Poland, Norway, Germany, Rumania, Czechoslovakia, Yugoslavia, and Brazil.

Table 2.—Lumber and Timber Products Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899	23,043	413,257	[1] 1,375,139	$147,951,886	$242,617,767	$555,042,605	$312,424,838
1909	33,090	547,178	[1] 2,316,634	238,866,806	265,559,595	753,388,368	487,828,773
1914 [2]	27,229	479,786	2,190,359	239,976,562	281,951,873	715,310,333	433,358,460
1919 [2]	26,119	480,945	2,355,345	489,419,091	470,960,488	1,387,471,413	916,510,925
1921 [3]	9,092	364,247	([4])	313,486,957	377,927,443	902,501,306	524,573,863
1923 [3]	9,393	495,932	1,932,091	475,962,443	573,063,833	1,494,462,031	921,398,198
1925 [3]	9,207	473,998	2,049,480	456,715,665	579,474,682	1,421,161,836	841,687,154

[1] Figures are not strictly comparable with later years because of the inclusion in these years and the exclusion in later years of data for rented power other than electric.
[2] Exclusive of custom sawmills.
[3] Exclusive of establishments with products under $5,000 each.
[4] Not called for in schedule for 1921.
Source: Bureau of the Census.

It is estimated that building construction in the United States uses about 60 per cent of the manufactured lumber. Railways account for the consumption of about 11 per cent, their purchases being largely ties, timber, and planking. About one-fifth of the total lumber cut is consumed by various manufacturing industries, other than those reworking lumber into building materials, the most important of which is the box and crate industry. The balance of the production, which it is estimated amounted to about 9 per cent in 1927, is exported.

Table 3.—Lumber: Quantity and Value of Cut as Reported, and Estimated Total Cut

NOTE.—The enumerations in different years vary somewhat as regards the proportion of the total number of mills actually reporting. The estimates of total cut allow for these differences. Estimated total cut for 1889 not available.

[Quantities in millions of board feet; values in thousands of dollars; average value per 1,000 board feet]

Year	Reported cut	Value	Average value	Year	Reported cut	Value	Average value	Year	Estimated total cut	Year	Estimated total cut
1889	23,842	$272,040	$11.41	1918	31.890	$790,565	$24.79	1899	35,084	1919	34,552
1899	35,078	390,414	11.13	1919	34.552	1,043,818	30.21	1909	44,510	1920	33,799
1909	44,510	684,560	15.38	1920	[2] 29,878	1,147,913	38.42	1911	43,000	1921	30,500
1911	37,003	556,898	15.05	1921	26,961	632,771	23.47	1912	45,000	1922	35,000
1912	39,158	601,082	15.35	1922	31,569	825,526	26.15	1913	44,000	1923	39,000
1913	38,387	----------	[1]	1923	37,166	1,181,120	31.78	1914	40,500	1924	37,000
1914	37,346	----------	[1]	1924	35,931	1,026,548	28.57	1915	38,000	1925	39,000
1915	37,012	519,644	14.04	1925	38,339	1,074,249	28.02	1916	40,000	1926	37,500
1916	39,807	609,847	15.32	1926	36,936	1,009,856	27.34	1917	36,000	1927	35,000
1917	35,831	728,091	20.32					1918	32,000		

[1] Not called for in schedule for 1913 and 1914.
[2] Figures represent partial returns; estimated total cut 33,798,800,000 board feet.

Sources: Bureau of the Census, Department of Commerce, and Forest Service, Department of Agriculture; estimated total cut for certain years based on National Lumber Manufacturers' Association data.

Table 4.—Reported Lumber Cut, by Regions

[In millions of board feet. See also headnote to Table 3]

Year	Total	Northeastern States	Central States	Lake States	Southern States	Rocky Mountain States	Pacific States [1]	All other States
1889	23,842	4,726	3,130	8,251	4,847	249	2,028	612
1899	35,078	5,709	5,643	8,750	11,116	556	2,901	401
1909	44,510	5,197	5,487	5,476	19,973	1,292	6,905	179
1914	37,346	3,553	3,621	3,918	17,801	1,340	7,067	46
1919	34,552	2.584	3,016	2,692	16,079	1,299	8,798	85
1920 [2]	33,799	2,198	2,735	2,386	14,362	1,699	10,355	64
1921	26,961	1,797	1,647	1,784	13,530	952	7,204	46
1922	31,569	1,423	1,762	1,944	14,383	1,430	10,581	45
1923	37,166	1,631	2.045	2,392	16,461	1,811	12,762	63
1924	35,931	1,619	2,036	2,339	16,239	1,699	11,929	69
1925	38,339	1,507	1,969	2,445	17,148	1,920	13,287	63
1926	36,936	1,409	1,987	2,047	15,571	1,670	14,189	63
Per cent of total, 1926	100.0	3.8	5.4	5.6	42.1	4.5	38.4	0.2

[1] Cut for Nevada included under "All other States" for 1909, 1914, 1919, and 1921.
[2] Estimated total cut; partial returns reported 29,878,000,000 board feet.

Sources: Bureau of the Census, Department of Commerce, and Forest Service, Department of Agriculture.

PRODUCTION AND SHIPMENTS OF LUMBER

Production.

Preliminary estimates for the year 1927, as made by the National Lumber Manufacturers Association, place the production of lumber at 35,000,000,000 board feet, a decrease of 7 per cent as compared with the estimated total of 37,500,000,000 board feet for 1926. The 1926 figures, as compiled by the Bureau of the Census (Table 4), show that the Southern States produced about 42 per cent of the total for that year, while the Pacific coast was responsible for about 38 per cent. Five-sixths of the 1926 lumber production consisted of softwoods, of which southern pine and Douglas fir were the leading species. Southern-pine production showed an appreciable decrease from 1925 to 1926 (Table 5), while the cut of Douglas fir showed an increase. Oak, gum, and maple are the most important hardwoods; the production of oak and gum increased slightly in 1926, while maple cut decreased 10 per cent.

Table 5.—Lumber Production (Reported Cut), by Principal Kinds of Woods

NOTE.—Figures for 1920 are computed totals from partial returns, and for 1919 represent practically complete returns; for other years, as reported by operators and somewhat incomplete. (See Table 3.)

[In millions of board feet]

Kind	1913	1919	1920	1921	1922	1923	1924	1925	1926
Total, all species	**38,387**	**34,552**	**33,799**	**26,961**	**31,569**	**37,166**	**35,931**	**38,339**	**36,936**
Softwoods (total)	**30,303**	**27,407**	**26,810**	**22,186**	**26,644**	**30,904**	**29,406**	**31,710**	**30,469**
Southern pine	14,839	13,063	11,091	10,960	11,501	12,949	12,487	13,236	11,752
Douglas fir	5,556	5,902	6,960	4,642	6,832	8,223	7,462	8,154	8,807
Western pine	1,259	1,755	2,290	1,432	2,081	2,805	2,603	3,127	3,173
Hemlock	2,320	1,755	1,850	1,201	1,535	1,873	1,879	2,140	2,159
White pine	2,569	1,724	1,500	1,274	1,383	1,572	1,531	1,521	1,366
Cypress	1,097	656	625	771	869	819	877	903	752
Spruce	1,047	980	825	629	731	758	717	751	647
Redwood	510	410	477	468	566	593	604	511	488
Sugar pine	150	134	146	134	194	229	246	307	306
Hardwoods (total)	**8,084**	**7,145**	**6,989**	**4,775**	**4,925**	**6,262**	**6,525**	**6,628**	**6,467**
Oak	3,212	2,708	2,500	1,592	1,605	2,028	2,077	2,129	2,191
Gum, red and sap	773	851	850	683	808	1,016	1,071	1,101	1,133
Maple	901	857	875	610	640	842	857	922	829
Birch	379	375	405	319	263	351	382	412	365
Yellow poplar	620	329	350	235	274	353	351	376	322
Chestnut	506	546	475	312	311	350	313	308	298

Sources: Forest Service, Department of Agriculture, and Bureau of the Census, Department of Commerce.

Lumber Transportation.

According to the American Railway Association, car loadings of forest products for the year 1927 totaled 3,421,000, a decrease of about 6 per cent as compared with the 1926 figure of 3,654,000. Statistics of car loadings of forest products since 1920 are shown in the following statement. A partial explanation as to the decrease in the number of cars used in 1926 and 1927 may be found in the fuller loads which are now being carried.

	Carloads		Carloads
1920	1,553,000	1924	3,667,000
1921	2,488,000	1925	3,737,000
1922	2,916,000	1926	3,654,000
1923	3,745,000	1927	3,421,000

Quarterly car loadings of forest products for 1925 and 1926 and monthly figures for 1927 are shown in Table 9 in the section on transportation and communications.

Water shipments from the Pacific to the Atlantic through the Panama Canal for the year 1927 amounted to 3,396,627 long tons, an increase over 1926 of 84,627 long tons which was due to increased sales to Europe. These shipments have shown a consistent increase during the past six years, with the 1927 activities almost eight times as large as the 1921 figures. These figures include all lumber moving eastward through the canal with a point of origin on the Pacific coast of North America. About 85 per cent of the shipments were bound for the Atlantic ports of the United States, with the balance divided among eastern Canadian ports, Europe, South American (east coast), and the West Indies.

Water-borne shipments from the Pacific Northwest, which includes Washington, Oregon, and British Columbia, amounted to 5,569,000,000 board feet of lumber and sawed timber in 1927, according to the records of the Pacific Lumber Inspection Bureau. The aforementioned figure represents shipments for export as well as coastwise business and shows a slight improvement over 1926. Shipments to the Atlantic coast of the United States showed a decrease of about 1 per cent, while those to California showed a decrease of 8 per cent. Of the total 1927 traffic to the Atlantic coast of the United States the port of New York took approximately one-half and Philadelphia, Baltimore, and Boston were the other most important destinations. For the first three months of 1928 exports of northwest lumber by water increased 21 per cent and domestic shipments increased 8 per cent.

Table 6.—Water-Borne Lumber Shipments from the Pacific Coast

[In thousands of board feet]

Origin and destination	1923	1924	1925	1926	1927
From:					
Washington	2,620,244	2,759,590	3,055,698	3,552,930	3,605,963
Oregon	1,133,750	1,199,540	1,242,921	1,294,391	1,222,436
British Columbia	521,707	506,262	577,560	712,743	740,200
Total	4,275,701	4,465,392	4,876,180	5,560,064	5,568,599
To:					
California	1,812,235	1,671,114	1,707,066	1,686,747	1,551,620
Atlantic coast	925,135	1,264,854	1,701,343	1,988,912	1,919,669
Hawaiian Islands	65,178	68,972	76,380	67,031	74,006
Other domestic	15,870	36,660	23,399	23,094	28,873
Japan	861,774	691,920	583,385	903,093	933,033
Australia	236,994	237,979	241,665	277,125	351,550
China	117,618	192,688	163,437	205,557	158,847
Other foreign	240,897	301,205	379,504	408,505	499,283
Total	4,275,701	4,465,392	4,876,180	5,560,064	5,568,599

Source: Pacific Lumber Inspection Bureau.

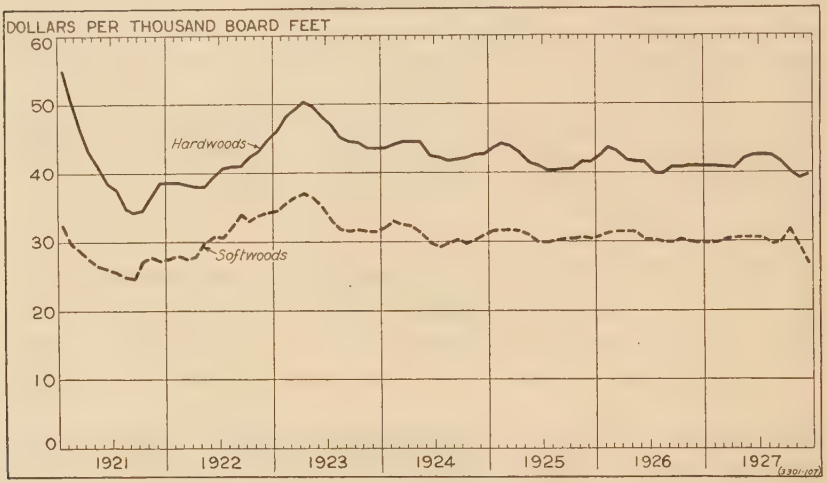
According to the United States Shipping Board, the lumber cargo which moved from the Pacific coast through the canal to Gulf and Atlantic ports of the United States, amounted to 2,066,939 long tons. Of this total the north Atlantic ports received 1,993,491 tons, or 96.4 per cent; the south Atlantic ports 8 per cent; and the Gulf ports 2.8 per cent.

PRICES

Lumber is cut from a large variety of species into many sizes and grades and it is almost impossible to give briefly a detailed statement of price movements. General trends are indicated, however, by means of the composite weighted averages. (Table 7.) The average composite price of softwood during 1927 fell to $29.86 from the 1926 average price of $30.57. The price of hardwoods was slightly under

the 1926 figure. Softwood prices declined in January and February, recovered in March, and held fairly steady for the next five months. In August and September recessions occurred, but in October prices rose to the highest point for the year. In December the average

Chart II.—COMPOSITE MONTHLY PRICES OF HARDWOODS AND SOFTWOODS



price fell to $26.84, the lowest level since 1921. Hardwood prices fluctuated within a comparatively limited area, the high for the year being $42.59 and the low $39.04, with the best prices during the summer months.

Table 7.—Composite Monthly Prices of Softwoods and Hardwoods

NOTE.—Weighted average covering hardwoods: Maple, birch, beech, basswood, elm, oak, gum, ash, cottonwood, chestnut, poplar, hickory, and walnut; and softwoods: Yellow pine, Douglas fir, North Carolina pine, white pine, hemlock, spruce, and cypress. Average prices for other years were: Softwoods—1920, $48.98; 1922, $30.79; hardwoods—1922, $40.33. Average prices for hardwoods were not reported prior to 1921.

[Per thousand board feet]

Month	Softwoods						Hardwoods					
	1921	1923	1924	1925	1926	1927	1921	1923	1924	1925	1926	1927
Year	$27.42	$33.86	$30.95	$30.71	$30.57	$29.86	$40.93	$46.72	$43.11	$41.80	$41.56	$41.13
January	32.38	34.51	31.98	31.44	30.79	29.74	54.93	46.18	43.71	43.49	42.60	41.11
February	29.88	35.53	32.97	31.68	31.32	29.76	50.07	48.30	44.14	44.23	43.79	41.08
March	28.78	36.56	32.44	31.63	31.44	30.26	46.61	49.18	44.46	43.78	43.00	40.80
April	27.59	36.94	32.28	31.41	31.48	30.52	43.17	50.28	44.60	42.92	41.96	40.65
May	26.54	36.47	31.34	30.84	31.46	30.65	40.89	49.78	44.67	41.43	41.70	41.96
June	26.14	35.10	29.97	29.93	30.22	30.65	38.48	48.42	42.53	40.94	41.61	42.47
July	25.70	33.23	29.31	29.85	30.21	30.57	37.72	47.05	42.12	40.22	39.95	42.59
August	24.92	31.84	29.82	30.15	29.93	29.49	34.90	45.35	41.77	40.16	39.95	42.40
September	24.89	31.39	30.27	30.35	29.90	29.74	34.29	44.58	41.90	40.58	40.96	41.64
October	27.01	31.69	29.79	30.35	30.28	31.77	34.63	44.37	42.19	40.54	40.93	40.02
November	27.78	31.56	30.21	30.59	29.98	28.29	36.70	43.68	42.59	41.67	41.15	39.04
December	27.37	31.48	30.96	30.34	29.78	26.84	38.76	43.46	42.63	41.69	41.15	39.74

Sources: Department of Commerce, Survey of Current Business, compiled from weekly data published in the Lumber Manufacturer and Dealer.

FOREIGN TRADE

United States exports of wood and manufactures have risen in value continuously during the past four years. Exports in 1924 were valued at $145,139,000. The 1925 and 1926 increases were small, but in 1927 the total export value was nearly 8 per cent higher than in 1926, reaching a total of $160,922,000. Although this is not as high a mark for lumber export values as in 1920, it represents the greatest volume of exportation in any year. Quantities made heavier gains over 1926 than values; the increase in quantity for lumber, timber, and logs was 11 per cent. Average export values have been fairly steady during the past four years, without the violent fluctuations such as occurred in the years 1920 to 1923. The largest single factor in the 1927 gain was the emergence of several important southern-pine markets (Germany, Italy, the Netherlands, and the River Plate) from dull business conditions which had curtailed their orders during 1926. For practically all classes of lumber there developed an increased demand during 1927.

Distribution of 1927 Exports.

During 1927 exports to the United Kingdom amounted to 21 per cent of the value of United States exports of lumber, logs, and timber, displacing Japan, which held first position in 1926. The value of exports to the United Kingdom was 18 per cent higher than in 1926 and the quantity taken was 28 per cent larger. Southern-pine exports to that market made a fair gain, Douglas-fir exports more than doubled, and hardwoods, for which the United Kingdom is a particularly important market, were taken in increased quantities.

The Japanese demand for lumber in 1927 was practically the same as in 1926. Exports of United States lumber to Japan in 1926 were three times and in 1927 twice the quantity which was required by the United Kingdom, but owing to the fact that Japan takes west-coast woods, including large quantities of logs, timbers, and thick flitches, its purchases fall far behind those of the United Kingdom in average unit value. The rise in British purchases was largely owing to an improvement in trade conditions as compared with the difficult year 1926 and partly to the encouragement afforded by slightly easier prices, particularly on softwoods.

The sharpest increases in demand during 1927 occurred on the continent of Europe. Exports to Germany more than doubled as compared with 1926, while exports to the Netherlands almost doubled and exports to Italy gained 28 per cent. Belgian, Spanish, and French purchases stood about on a level with those in the previous year.

The most notable drop in exports during 1927 occurred in the case of China, owing to the internal difficulties throughout the year. Australian demand was about 27 per cent greater than in 1926, and New Zealand's purchases were also greater, partly owing, in both cases, to anticipation of increases in the tariff on lumber.

Table 8.—Exports of Wood and Manufactures Thereof

[All quantities in thousands of board feet, except as specified; values in thousands of dollars]

Item	Quantity				Value			
	1924	1925	1926	1927	1924	1925	1926	1927
Wood and manufactures [1]					145,139	147,817	149,049	160,922
Boards, planks, and scantlings	1,906,344	1,947,809	1,956,727	2,188,836	78,630	83,028	78,219	86,520
Douglas fir	623,525	607,908	694,486	685,907	15,790	13,925	15,273	15,379
Southern pine	670,521	701,046	581,564	710,549	26,736	31,548	25,779	30,354
White, western, and sugar pine	40,827	34,673	32,038	33,783	2,082	2,111	1,991	1,941
Redwood	34,371	46,235	47,855	65,630	2,419	3,257	2,647	3,702
Spruce	33,630	27,701	20,497	24,862	2,067	1,595	1,433	1,034
Hemlock	135,678	126,972	179,669	211,607	3,576	2,698	3,856	4,256
Ash	19,923	25,141	17,526	26,134	1,449	1,756	1,171	1,717
Gum	52,714	54,633	59,035	51,243	2,502	2,794	3,071	2,592
Oak	172,830	183,590	177,835	212,202	11,495	12,070	12,188	13,773
Poplar	28,474	30,644	32,207	34,554	2,129	2,202	2,171	2,190
Walnut	8,859	10,893	8,522	10,218	1,285	1,508	1,104	1,279
Mahogany	15,842	19,002	17,955	17,043	2,329	2,694	2,697	2,555
All other	69,150	79,371	87,538	105,104	4,771	4,869	4,837	5,748
Timber, sawed [2]	724,056	554,519	737,161	761,699	22,474	15,935	18,428	20,426
Southern pine	174,758	154,467	122,989	182,138	6,738	6,354	4,961	8,223
Douglas fir	485,120	340,742	555,338	544,827	12,831	7,309	11,499	11,225
Cedar	31,432	35,581	27,955	5,257	1,667	1,438	1,025	187
All other	32,746	23,729	30,879	29,477	1,238	834	942	792
Cedar logs	104,460	107,790	138,463	186,976	3,102	3,120	3,595	4,112
Other logs and hewn timber [3]	39,689	53,743	104,532	136,721	1,926	2,286	2,492	3,221
Railroad ties (thousands)	2,471	3,105	3,761	3,550	2,551	2,975	3,508	3,560
Cooperage staves (thousands)	69,608	81,928	67,567	81,426	4,414	4,828	4,136	4,816
Cooperage shooks (thousand sets)	1,839	1,935	2,132	2,595	4,015	4,242	4,594	4,390
Box shooks	103,438	97,015	120,631	97,110	4,063	3,738	4,425	3,571
Veneers (thousand square feet)	53,511	56,930	72,173	65,894	1,638	1,571	1,869	1,626
Plywood (thousand square feet)		17,562	19,141	17,206		691	753	779
Doors (thousands)	580	1,371	1,825	2,122	1,325	2,700	3,351	3,930
Sash and blinds (thousands)	33	61	53	81	115	118	126	153
Handles for agricultural implements (thousand pounds)	27,290	30,663	[4] 300	[4] 911	2,158	2,386	454	973
Handles for striking tools (thousand pounds)			[4] 1,353	[4] 970			1,796	1,283
Furniture					2,895	2,795	3,071	3,183
All other [1]					15,835	17,403	18,232	18,579

Calendar year	Total value	Calendar year	Total value	Calendar year	Total value
1891–1895	27,225	1921–1925	126,124	1924	145,139
1896–1900	42,494	1919	136,802	1925	147,817
1901–1905	57,085	1920	186,502	1926	149,049
1906–1910	78,576	1921	90,515	1927	160,922
1911–1915	89,368	1922	99,611		
1916–1920	108,323	1923	147,536		

[1] Includes wood pulp and incubators and brooders, which items have been classified under paper base stocks, and agricultural machinery and implements, respectively, since Jan. 1, 1922, and pulp wood which also has been included with paper base stocks beginning Jan. 1, 1926, but have been included in this table for comparison purposes.

[2] Includes hewn timber prior to 1925.

[3] Includes round timber prior to 1925.

[4] Quantity for 1926 and 1927 reported in thousands of dozens.

Source: Bureau of Foreign and Domestic Commerce.

Among Latin-American markets, Argentina increased its purchases of lumber from the United States 45 per cent in 1927 and Uruguay 34 per cent. Exports of all important woods showed large gains except Douglas fir and gum, which decreased 1 and 13 per cent, respectively.

Exports to Cuba, which are almost exclusively southern pine, did not show much change from those for 1926, as was to be expected in view of business and financial conditions. Canadian lumber, timber, and log purchases (which are about 60 per cent hardwood, 20 per cent southern pine, and the rest mainly Douglas fir and hemlock), increased about $500,000 in value during 1927, and Mexican purchases, about one-half of which are southern pine and one-third Douglas fir, declined by practically the same amount.

Table 9.—Destination of Principal Export Woods From the United States, 1927

NOTE.—The total exports of cedar lumber, logs, and timber in 1927 amounted to 211,327,000 board feet; the total exported to Japan amounted to 202,673,000 board feet.

[Combined totals of lumber, timber, and logs, in thousands of board feet]

Country	Total value, all species	Total, all species	Douglas fir	Southern pine	Oak [1]	Hemlock [2]	Gum [3]	Red wood [3]	Other species [3]
Total	**$114,223,914**	**3,274,088**	**1,263,248**	**896,902**	**212,202**	**211,607**	**51,243**	**65,630**	**573,256**
Belgium	1,517,333	35,405	10,935	11,703	10,594	94	1,232		847
Germany	4,575,571	81,590	21,109	44,137	991	184	341	643	14,185
Italy	2,908,644	66,041	4,487	53,720	167		6,306	30	1,331
Netherlands	5,196,798	112,998	31,558	70,126	6,846	852	573	467	2,576
Spain	1,959,554	45,844	1,063	37,102	4,338		2,410	100	831
United Kingdom	24,297,431	415,726	57,137	116,530	116,737	483	19,208	357	105,274
Other Europe	1,653,538	27,880	4,216	14,527	3,550	197	1,808	7	3,575
Canada	10,321,825	220,222	19,572	34,671	46,973	14,996	15,545	1,008	87,457
Mexico	3,446,248	93,917	29,898	48,946	1,847	2	468	2,668	10,088
Cuba	3,882,734	127,913	12,599	107,182	105	0	637	3,626	3,764
Other North America	3,491,069	87,834	12,860	67,690	162	5	31	2,446	4,640
Argentina	11,094,368	275,406	40,479	205,401	12,849	8,597		1,226	6,854
Peru	1,744,038	88,797	85,615	532	158	64		540	1,888
Uruguay	1,649,755	39,729	6,887	26,212	2,210	2,728		140	1,552
Other South America	2,150,526	68,498	45,488	16,374	213	845	47	1,620	3,911
China	2,302,335	129,858	122,170	264	51	180			7,193
Japan	18,713,684	917,577	463,725	1,258	1	165,496		45	287,052
Other Asia	474,556	21,913	20,903	448	12		254	64	232
Australia	9,268,969	335,570	253,823	281	214	16,857	27	43,372	20,996
Other Oceania	738,492	19,212	10,860	150	102			6,534	1,566
Union of South Africa	1,609,686	32,806	5,233	15,587	3,526	27	535	729	7,169
Other Africa	1,226,760	29,352	2,631	24,061	556		1,821	8	275

[1] Oak logs and hewn timber are included in "Other species."
[2] Logs and timber are included in "Other species."
[3] Also includes "Cedar lumber." See headnote.
Source: Bureau of Foreign and Domestic Commerce.

Imports.

Imports of wood and manufactures into the United States decreased in value for 1927, as compared with 1926, by 9 per cent, aggregating $92,500,000. Sawmill products imported during 1927 amounted to $64,000,000, and logs, ties, and poles to $15,900,000. Softwood-lumber imports, which showed a decrease of 8 per cent, were almost entirely from Canada. Mahogany log imports were somewhat greater than in 1926, while Spanish cedar log imports continued to decline. Imports of Douglas fir and western cedar, spruce, and hemlock logs to Puget Sound mills from British Columbia exceeded the

1926 value by about $750,000. Imports of Philippine logs were three times as large as in 1926 and imports of Philippine lumber gained nearly 35 per cent.

Table 10.—Principal Imports of Lumber, Logs, and Timber

[Quantity in thousands of board feet, except laths and shingles, which are in thousands; value in thousands of dollars]

Class	Quantity				Value			
	1924	1925	1926	1927	1924	1925	1926	1927
Cabinet woods, unmanufactured:								
Cedar, Spanish	7,420	9,965	5,577	4,231	480	625	343	272
Mahogany	54,623	73,224	68,431	72,828	4,862	5,767	5,309	5,897
Other logs and timber	242,665	221,000	187,626	268,032	5,075	4,684	4,249	5,185
Boards, planks, and other lumber:								
Softwoods	1,656,501	1,734,807	1,776,505	1,633,785	48,333	50,431	48,776	43,180
Hardwoods	66,355	80,272	91,546	72,951	3,534	4,624	4,998	4,296
Sawed cabinet woods	19,706	31,319	31,073	37,891	1,127	1,759	1,586	2,021
Laths	1,675	1,969	1,832	1,705	10,152	10,608	9,748	7,250
Shingles	2,568	2,513	2,492	1,965	9,328	9,992	8,907	6,693

Source: Bureau of Foreign and Domestic Commerce.

Imports of softwood lumber (boards, planks, and scantlings) from Canada during 1927 amounted to 1,600,000,000 feet, which is the smallest annual total in the past five years. Imports of Canadian hardwood lumber were also less. Increased log imports, however, largely offset the decrease in the imports of lumber. Canada's total shipments of lumber to all countries (Table 11) fell off again in 1927 in contrast to the rise in United States exports. Spruce continues to be Canada's largest export species, while Douglas fir has risen to second place, displacing white pine, and indicating the rise in importance of the British Columbian lumber industry and the displacement of east Canadian lumber in our North Atlantic States by Pacific coast lumber coming via the Panama Canal.

Table 11.—Comparative Lumber and Sawed Timber Exports of the United States and Canada

[In millions and tenths of millions of board feet. Totals include species not shown separately]

Class	1920	1921	1922	1923	1924	1925	1926	1927
Exports from United States:								
All species	1,722.1	1,340.3	1,881.8	2,368.2	2,630.4	2,502.3	2,693.9	2,950.5
All hardwoods	218.4	147.5	250.1	310.7	339.5	365.6	354.5	408.5
All softwoods	1,503.7	1,192.8	1,631.8	2,057.5	2,290.9	2,136.7	2,339.4	2,542.0
Pine	931.8	538.2	659.8	867.6	886.1	890.2	735.3	922.7
Spruce	21.9	7.2	35.2	34.5	33.6	27.7	20.5	24.9
Douglas fir	451.2	455.2	787.2	895.7	1,108.6	948.7	1,249.8	1,230.7
Exports from Canada:								
All species	1,967.6	1,079.3	2,048.7	2,515.5	2,179.7	2,273.8	2,249.1	2,192.5
Pine	530.7	290.0	466.7	528.0	418.8	468.2	444.0	392.0
Spruce	1,029.9	544.7	1,075.5	1,126.7	927.7	988.0	856.5	833.1
Douglas fir	143.6	156.9	319.3	533.2	532.6	535.0	657.6	680.3
Exports from Canada to United States:								
All species	1,311.0	811.4	1,557.5	1,938.2	1,670.6	1,819.1	1,776.9	1,635.9
Pine	425.1	243.9	415.6	462.5	353.5	406.4	394.3	348.2
Spruce	601.2	445.4	822.2	876.2	753.3	810.4	747.5	685.0
Douglas fir	72.1	50.3	181.6	334.0	324.8	376.3	401.2	383.9

Sources: Bureau of Foreign and Domestic Commerce and Monthly Trade Returns of Canada.

Cork imports, which exhibited a phenomenal growth during 1926, owing to the demands of the electrical refrigeration industry, reached in 1927 a value of $9,900,000.

In the world export lumber trade (sawn timber and lumber) the United States continued to lead during 1927; Finland, which had greatly increased exports, took second rank, and Canada declined to third place. Total exports from Canada and shipments to the United States are shown in Table 11. The trade of other leading lumber producing and consuming countries will be shown in Volume II of the Commerce Yearbook.

OTHER FOREST PRODUCTS

Many other products in addition to lumber are derived from our forests. According to the Department of Agriculture about 9,500,000,000 cubic feet of wood are removed annually from forests for fuel which is about 13 per cent more than goes into dwellings and other building. Pulpwood and naval stores are also very important forest products. The statistics for the former are given in the paper section, while turpentine and rosin are covered in the chemical section of this yearbook.

Among important wood products are cooperage, ply woods, and veneers. Production statistics for these industries are collected in the biennial census of manufactures. According to the 1926 census the production of laths amounted to 3,083,000,000 pieces and shingle output totaled 6,008,000,000 pieces. Railroads purchased 111,000,000 ties in 1925 as compared with 136,000,000 in 1923. Agriculture is also dependent on lumber as the farms consume about 40 per cent of the entire output.

PROGRESS IN WOOD UTILIZATION AND SIMPLIFICATION

National Committee on Wood Utilization.

The National Committee on Wood Utilization was established in 1925 as an impartial, cooperative undertaking between industry and the Government. The committee consists largely of representatives of trade and professional associations. Its aim is to effect a wiser and more efficient use of wood and forest products as a means of advancing commercial reforestation.

Some of the outstanding features of the committee's work have been the preparation of a manual on wood construction, the distribution of information concerning the use of end-matched softwood lumber under varying conditions, and the encouragement of the use of short-length lumber through changes in Government specifications and the distribution of information to the public in regard to its marketing. The committee has also encouraged grade marking in order to give the consumers a better understanding of lumber grades and to facilitate the checking up of purchases. It

has also conducted tests in regard to the chemical treatment of wood to resist decay and insect attack, tests of logging and sawmill equipment in order to obtain the maximum utilization of trees, and has made studies in regard to the various uses of sawdust, the use of domestic kraft pulp for manifold paper purposes, improved designs for containers, testing of nails, and uses for discarded containers.

A survey of nonutilized woods in the State of Virginia has been completed, which shows an annual supply of 20,000 carloads of nonutilized wood. A similar survey is under way in North Carolina, and additional surveys will be conducted in other States.

Progress in Simplification.

Considering the wide and diversified utilization of lumber and wood products, the progress made during 1927 in simplification and standardization in this field is of the utmost significance. During the year the industry in cooperation with the Division of Simplified Practice of the Department of Commerce adopted simplification projects in regard to rotary cut lumber stock for wire-bound boxes, ash handles, hickory handles, and folding and portable wooden chairs. In addition to these completed projects, proposals are under consideration for the simplification of refrigerator sizes and wooden dowels. During 1927 the lumber standardization program was given impetus through the development of grade marking for cut lumber and a recommendation in regard to this subject will be considered by a conference of lumber producers, distributors, and organized consumers in 1928.

Simplification programs previously adopted in this field are working out well in practice. The project which established standard nomenclature and standard grades and sizes for softwood lumber reduced the actual finished yard lumber items by 60 per cent and established a firm foundation for grade equalization. It is estimated that about four-fifths of the annual softwood output conforms to this recommendation.

STONE, CLAY, AND GLASS PRODUCTS

A large number of important building materials are found among the products of the industries included by the Census of Manufactures in the stone, clay, and glass products group. This group comprises industries manufacturing products made of stone or chiefly derived from stone, such as concrete products, roofing slate, dressed building stone, lime, and cement; those using clay or other minerals or earths as the chief materials and manufacturing brick, tile, and pottery; and those engaged in the manufacture of glass and glassware. In making use of the figures for the total value of products for the group it must be borne in mind that this total includes a considerable amount of duplication owing to the use of the products of certain industries as materials for others. For example, the product

of cement factories becomes one of the chief materials used in the manufacture of concrete products, and the products of glass factories are used as materials by manufacturers of cut glass and of mirrors. Thus the total value of the group is greater than the net value of the products in the form in which they reach the ultimate consumer.

Table 12.—Stone, Clay, and Glass Products

NOTE.—Data for establishments with products under $5,000 in value are included in the figures for 1914 and 1919, but not in those for subsequent years.

Year and industry	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of product	Value added by manufacture
				In thousands of dollars			
The group as a whole:							
1914	14,790	335,824	1,493,976	206,084	240,817	618,700	377,883
1919	12,599	302,810	1,584,917	332,725	422,612	1,111,747	689,135
1921	8,347	252,990	(1)	307,065	428,257	1,033,089	604,832
1923	8,317	351,692	1,936,054	453,567	573,473	1,563,121	989,648
1925	8,478	353,036	2,348,157	467,012	603,427	1,640,652	1,037,225
Industries using stone as the chief material:							
1914	9,530	115,642	808,040	74,637	119,163	277,562	158,399
1919	7,969	93,881	796,159	108,521	195,407	457,760	262,353
1921	4,752	84,565	(1)	109,834	212,557	464,613	252,056
1923	4,621	118,560	1,071,210	167,466	273,369	697,461	424,092
1925	4,852	123,699	1,365,906	178,644	300,793	779,032	478,239
Industries using clay or other minerals or earths as chief materials:							
1914	4,095	134,429	513,164	76,153	62,481	191,418	128,937
1919	3,457	122,330	572,145	127,703	109,568	342,829	233,261
1921	2,624	106,627	(1)	120,200	108,774	316,056	207,282
1923	2,734	151,176	613,862	185,282	155,034	497,812	342,778
1925	2,688	150,953	700,775	189,011	155,938	502,770	346,832
Glass and manufactures of glass:							
1914	1,165	85,753	172,772	55,294	59,173	149,720	90,547
1919	1,173	86,599	216,613	96,501	117,637	311,158	193,521
1921	971	61,798	(1)	77,031	106,926	252,420	145,494
1923	962	81,956	250,982	100,819	145,070	367,848	222,778
1925	938	78,384	284,476	99,357	146,696	358,850	212,154
MAJOR INDUSTRIES, 1925							
Marble, slate, and stone work	2,356	36,575	240,297	59,593	66,976	193,047	126,071
Lime	283	12,095	87,871	14,002	20,049	50,736	30,687
Cement	145	38,437	871,650	53,911	114,169	300,895	186,726
Concrete products	1,666	14,722	38,361	20,761	27,792	75,214	47,422
Wall plaster, wall board, and floor composition	222	10,978	82,863	16,078	39,553	90,957	51,404
Clay products (other than pottery) and nonclay refractories	1,939	102,777	517,204	127,127	100,013	333,730	233,717
Pottery, including porcelain ware	309	36,536	50,141	46,769	33,926	111,078	77,152
Glass	310	69,371	271,639	86,736	113,652	295,959	182,307

[1] Not called for in schedules for 1921.

Source: Bureau of the Census.

Every one of the more important industries of this group contributes materially toward building construction, although a considerable portion of the output of certain of them is devoted to other uses. Even among the latter the pottery industry, of which the chief products are porcelain, china, earthenware, and stoneware, contributed to the building industry in 1925 vitreous china plumbing

fixtures valued at $25,000,000, while the glass industry, in addition to the various types of building glass, contributed $20,000,000 worth of illuminating glassware, including electric lamp bulbs ($10,000,000).

The principal census data for this group of industries are presented in Table 12. A recent change in the classification of sand-lime brick, which transferred it from the group using clay or other minerals or earths as chief materials to the group using stone as the chief material, has effected a change in all previously published figures for these groups. The decline in the census figures from 1919 to 1921 was owing, at least in part, to the raising of the minimum size of reporting establishments, and to the fact that there was a serious depression in construction activity in 1920 and 1921. Similarly, the increase of almost 60 per cent in the value of products of the industry between 1921 and 1925 reflects the unprecedented activity in the building field during those years which was carried on into the two succeeding years. The products of the major industries listed in the table are treated in greater detail in the following pages.

CEMENT

The increasing importance of the cement industry, as indicated by the census figures presented in Table 13, is a parallel development with the changing tendency of modern methods of construction. The value of products of the industry was nearly five times as great in 1925 as in 1909, while cost of materials was less than four times as great. During the same period the increase in the number of wage earners engaged in the industry was only 44 per cent, while the increase in primary horsepower employed was 134 per cent, indicating a tendency toward the greater use of machinery in cement production. Wages increased in about the same ratio as cost of materials, and the average annual wage per worker was about 2½ times as great in 1925 as in 1909.

Table 13.—The Cement Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1909	135	26,775	371,799	$15,319,662	$29,343,791	$63,205,455	$33,861,664
1914	133	27,916	490,402	18,192,282	51,986,798	101,756,444	49,769,646
1919	123	25,524	488,808	33,194,920	79,509,800	175,264,910	95,755,110
1921 [1]	125	26,231	(2)	34,415,677	102,359,637	203,626,929	101,267,292
1923 [1]	133	35,091	642,840	49,707,992	[3] 100,766,747	[3] 264,098,497	[3] 163,331,750
1925 [1]	145	38,437	871,650	53,911,519	[3] 114,168,969	[3] 300,895,070	[3] 186,726,101

[1] The figures for 1921, 1923, and 1925, do not include data for establishments reporting products under $5,000.
[2] Not called for in schedule for 1921.
[3] Not strictly comparable, for the reason that in the 1923 and 1925 figures the cost or value of containers is excluded, whereas the figures for the earlier years include containers.

Source: Bureau of the Census.

Production and Shipments.

Although a complete census of manufacturing industries is only taken every two years, statistics of production are now gathered each year for many of the important industries. Portland cement production statistics in 1926 and 1927, as reported by the Bureau of Mines, show the continued growth of the industry since the 1925 census period. The estimated output of almost 172,000,000 barrels during 1927 exceeded that of 1926, the previous record year, by 4.3 per cent, and was 74 per cent greater than during the depressed building year, 1921.

For the 140 plants active at the end of 1926, the commercial capacity for production of finished Portland cement was estimated at 204,400,000 barrels. This total included, in addition to increased capacity owing to extensions and improvements at old plants, approximately 3,500,000 barrels capacity of three new plants which began operation during the year. At the end of December, 1927, the number of active plants was 155. The ratio of production to capacity was 73.9 per cent in 1927 as compared with 76.2 per cent in 1926.

Table 14.—Portland Cement Production

NOTE.—In early years the production of natural cement, not shown in the table, exceeded that of Portland cement, but it has now become relatively unimportant.

[Quantities in thousands of barrels, 376 pounds net; value in thousands of dollars]

Yearly average or year	Quantity	Value [1]	Average value per barrel [1]	Year	Quantity	Value [1]	Average value per barrel [1]
1881–1885	97	207	$2.14	1918	71,082	113,731	$1.60
1886–1890	257	494	1.92	1919	80,778	138,130	1.71
1891–1895	676	1,250	1.85	1920	100,023	202,047	2.02
1896–1900	4,409	6,013	1.36	1921	98,842	187,108	1.89
1901–1905	22,808	23,542	1.03	1922	114,790	202,030	1.76
1906–1910	57,573	54,214	.94	1923	137,460	261,174	1.90
1911–1915	85,442	76,300	.89	1924	149,358	270,338	1.81
1916–1920	87,244	136,105	1.56	1925	161,659	286,136	1.77
1921–1925	132,422	241,357	1.82	1926	164,530	281,347	1.71
1913	92,097	92,558	1.01	1927	[2] 171,908	([3])	([3])

[1] From 1921 to 1927, inclusive, value and average value per barrel are based upon shipments.
[2] Estimated, subject to revision.
[3] Not available.
Source: Bureau of Mines, Department of Commerce.

Since 1924, in spite of slight variations, a certain regularity has appeared in the trend of the monthly production of Portland cement. Production during January and February has been uniformly low, followed by increases month by month until the maximum monthly production was attained in July or August, with a gradual decline from that time until the end of the year. In each subsequent year the maximum monthly production of the preceding year has been exceeded in a number of months and a new monthly record established approximately 1,000,000 barrels higher than for the year before. The greatest production of Portland cement on record was in August, 1927, and amounted to 18,315,000 barrels.

Table 15.—Monthly Production and Shipments of Portland Cement [1]

[In thousands of barrels, 376 pounds net]

Month	Production						Shipments			
	1922	1923	1924	1925	1926	1927 [2]	1924	1925	1926	1927 [2]
January	4,291	7,990	8,788	8,856	7,887	8,258	5,210	5,162	5,674	5,968
February	4,278	8,210	8,588	8,255	7,731	7,377	5,933	6,015	5,820	6,731
March	6,685	9,880	10,370	11,034	10,390	11,450	8,995	10,279	9,539	11,100
April	9,243	11,359	11,726	13,807	12,440	14,048	12,771	14,394	12,965	14,350
May	11,176	12,910	13,777	15,503	16,510	16,701	14,551	16,735	17,973	16,865
June	11,245	12,382	13,538	15,387	16,866	17,224	15,036	17,501	19,134	19,761
July	11,557	12,620	14,029	15,641	17,134	17,408	16,614	18,131	18,812	18,984
August	11,664	12,967	15,128	16,419	16,995	18,315	16,855	18,383	18,583	21,411
September	11,424	13,109	14,519	15,939	16,571	17,505	16,827	17,711	18,087	19,828
October	12,287	13,350	14,820	15,992	16,596	17,174	17,160	15,309	17,486	18,105
November	11,349	12,603	13,141	13,656	14,193	14,449	10,289	10,187	11,276	11,619
December	8,671	9,997	10,435	10,713	10,744	11,999	5,506	6,917	6,432	6,200

[1] This table has been compiled mainly from reports of producers, but includes estimates for one or two plants each month. The sum of the monthly figures therefore only approximates the totals based on final annual returns from the producers.

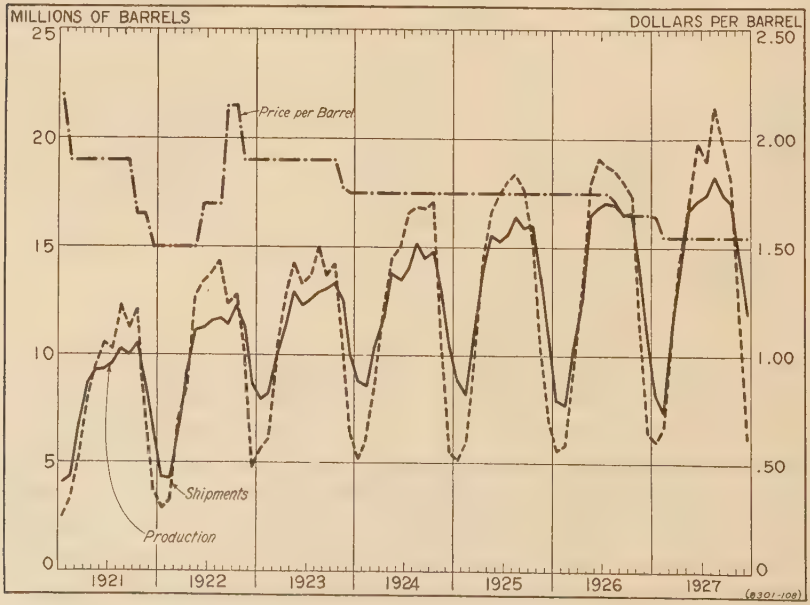
[2] Estimates, subject to revision.

Source: Bureau of Mines, Department of Commerce.

Shipments of cement have shown a less marked and less regular seasonal trend than that of production. Although the first or last month of each year showed the lowest volume of shipments, the

Chart III.—PORTLAND CEMENT: PRODUCTION, SHIPMENTS, AND PRICES

NOTE.—Prices at Lehigh Valley Mills.



month of maximum shipments varied from June to October, but occurred most frequently in August.

Total shipments of 170,922,000 barrels of Portland cement were made during 1927, according to a preliminary estimate of the Bureau

of Mines, an increase of 5 per cent as compared with the final totals for 1926. (Table 16.) During the first three and the last two months of the year, when active demand was not so great, shipments were less than production and corresponding additions were made to producers' stocks; but in other months shipments were in excess of production by a margin ranging from 300,000 barrels in April to 3,000,000 barrels in August and to supply the increased demand stocks were drawn upon. During August, 1927, 21,400,000 barrels of finished cement were shipped from the mills, which was the largest amount on record.

Consumption.

The quantity of Portland cement available for consumption in the United States during 1927 was 172,155,000 barrels, a supply 5 per cent greater than in 1926. As shown in Table 16, more than 99 per cent of the cement available for consumption is a domestic product. Although there has been some increase in imports during recent years, domestic production has kept an even stride with national demand. The addition of more than 1,000,000 barrels to producers stocks and the exportation of a little less than 1,000,000 barrels just about balanced the 2,000,000 barrels imported during 1927.

Table 16.—Portland Cement Available for Consumption

[In barrels of 376 pounds net]

Year	Shipments	Imports	Exports	Available for consumption
1920	96, 311, 719	524, 604	2, 985, 807	93, 850, 516
1921	95, 507, 147	122, 322	1, 181, 014	94, 448, 455
1922	117, 701, 216	323, 823	1, 127, 845	116, 897, 194
1923	135, 912, 118	1, 678, 636	1, 001, 688	136, 589, 066
1924	146, 047, 549	2, 010, 936	878, 543	147, 179, 942
1925	157, 295, 212	3, 655, 317	1, 019, 597	159, 930, 932
1926	162, 187, 090	3, 232, 386	974, 326	164, 445, 150
1927	[1] 170, 922, 000	2, 049, 730	816, 829	172, 154, 901

[1] Preliminary figures.

Source: Bureau of Mines, Department of Commerce.

The distribution of the apparent consumption of cement by geographic divisions in 1926, the latest year for which data are available, is shown in Table 17. While the total apparent consumption in the United States as a whole increased about 20 per cent in 1926 as compared with 1923, the changes in the different divisions showed a wide range of variation. In the South Atlantic division consumption increased 35 per cent; in the East South Central, 33 per cent; in the Middle Atlantic, 27 per cent; and in the West South Central, 25 per cent. The percentage increase in other divisions was less, but only in the Mountain division was there a decrease in consumption as compared with that of 1923. More than one-half the total apparent

consumption is in the Middle Atlantic and East North Central divisions. In each of these divisions there was an increase in consumption in 1926, as compared with 1925, and several of the less important districts also showed slight increases.

Table 17.—Apparent Consumption of Cement, by Geographic Divisions

NOTE.—The data represent quantities shipped from cement plants to the several divisions.

[In thousands of barrels, 376 pounds net]

Division	1923	1924	1925	1926	Division	1923	1924	1925	1926
Total	134, 703	145, 062	156, 118	160, 940	South Atlantic	13, 008	13, 616	16, 029	17, 576
New England	6, 179	6, 615	6, 865	6, 733	East South Central	4, 781	5, 722	6, 105	6, 378
Middle Atlantic	32, 563	36, 831	40, 504	41, 180	West South Central	7, 326	8, 409	8, 467	9, 178
East North Central	38, 688	41, 984	42, 294	44, 331	Mountain	3, 304	3, 301	2, 959	3, 203
West North Central	15, 510	14, 736	16, 657	16, 270	Pacific	13, 256	13, 789	16, 179	16, 032
					Unspecified	88	60	59	60

Source: Bureau of Mines, Department of Commerce.

Prices.

Wholesale prices of cement at Chicago and at Lehigh Valley mills were fairly steady throughout 1927, averaging $1.60 and $1.56 per barrel, respectively, a decline of 5 cents per barrel in the former and 15 cents in the latter as compared with prices in 1926. At both points prices declined during the first quarter and remained stationary for the rest of the year at the lowest point reached since about the middle of 1922. The average price at Chicago in October was 5 cents, 10 cents, and 15 cents lower than during the same month one, two, and three years earlier, while the October price at the Lehigh Valley mills was 10 cents lower than the price in October, 1926, and 20 cents below the 1924 and 1925 price.

Table 18.—Prices of Cement at Chicago and Lehigh Valley Mills

[Price per barrel of 376 pounds net]

Year	Chicago	Lehigh Valley	Month	1921	1922	1923	1924	1925	1926	1927
1913	$1.01	$0.89	CHICAGO							
1914	.92	.89								
1915	.97	.79	January	$1.93	$1.50	$1.60	$1.72	$1.74	$1.65	$1.64
1916	1.19	1.03	April	1.70	1.50	1.75	1.75	1.75	1.65	1.60
1917	1.53	1.40	July	1.70	1.60	1.75	1.75	1.75	1.65	1.60
1918	1.67	1.75	October	1.50	1.75	1.75	1.75	1.70	1.65	1.60
1919	1.66	1.74								
1920	1.80	2.05	LEHIGH VALLEY							
1921	1.66	1.85								
1922	1.61	1.73	January	2.20	1.50	1.90	1.75	1.75	1.75	1.63
1923	1.72	1.88	April	1.90	1.50	1.90	1.75	1.75	1.75	1.55
1924	1.74	1.75	July	1.90	1.70	1.90	1.75	1.75	1.75	1.55
1925	1.73	1.75	October	1.65	2.15	1.90	1.75	1.75	1.65	1.55
1926	1.65	1.71								
1927	1.60	1.56								

Source: Bureau of Labor Statistics, Department of Labor.

Foreign Trade.

Imports of hydraulic cement, as shown in Table 16, increased annually from 1922 to 1925, but declined during the past two years, imports of 2,050,000 barrels in 1927 being only slightly greater than those in 1924 and more than 1,000,000 barrels less than in 1926. By far the greater part of these imports come from Belgium, while small quantities are also received from Denmark and the United Kingdom. More than 60 per cent of the imports of cement in 1926 entered the country through the Florida, Massachusetts, and Philadelphia customs districts.

The quantity of hydraulic cement exported in 1927 amounted to only 817,000 barrels, or less than one-half of 1 per cent of the total production and consumption of cement in the United States. Most of these exports go to South America, Mexico, and Cuba.

Technical Progress.

In response to the demand for cement of higher strength, the specification minima of standard Portland cement had been slightly increased during 1926. During 1927, in addition to the continually growing demand for high-strength cement, the demand for high early strength increased, particularly in connection with road-repair work and pavement reconstruction in busy streets. A number of cements to meet this demand are on the market, one or two new ones having been added during the past year.

CONCRETE PRODUCTS

The manufacture of concrete units for building and other uses has become an increasingly important industry during recent years. The growth of this industry, which uses cement as one of its chief raw materials, has paralleled that of the cement industry, though upon a scale only about one-third as great. Data on the production have not been published since the regular Census of Manufactures in 1925. As shown in Table 19, the value of the output was more than $75,000,000 in 1925 as compared with $22,000,000 in 1914. Since 1921 there has been a continuous expansion through the multiplication of the number of establishments as well as through an increase in their size and in the efficiency of production.

Table 19.—The Concrete Products Industry

NOTE.—Data for establishments with products under $5,000 in value are included for 1914 and 1919, but not for subsequent years.

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of product	Value added by manufacture
1914	3,548	10,255	20,274	$6,307,752	$8,903,630	$21,933,630	$13,030,000
1919	2,785	8,378	22,178	9,310,899	13,913,317	33,664,332	19,751,015
1921	1,123	6,984	[1]	8,690,770	13,483,392	31,768,143	18,284,751
1923	1,128	10,766	30,748	14,834,042	20,485,547	53,602,321	33,116,774
1925	1,666	14,722	38,361	20,761,376	27,792,116	75,213,986	47,421,870

[1] Not called for on schedule.

Source: Bureau of the Census.

Of the total value of output of the concrete products industry, in 1925, block and tile, cast stone, roofing tile, and concrete building brick constituted 64 per cent. Concrete pipe, another product of the industry closely related to building construction, was second in value only to block and tile. The relative importance of the principal products of this industry is shown in Table 20, which gives both the quantity and value of production for the year 1925. In addition to concrete roofing tile, cement roofing tile, made of cement, sand, and coloring materials and valued at $476,000, was reported by manufacturers of special roofing materials.

Table 20.—Production of Principal Concrete Products, 1925

Product	Tons	Value	Product	Tons	Value
Block and tile	4,183,945	$31,193,535	Concrete building brick	263,858	$2,532,246
Pipe [1]	1,196,693	16,874,832	Vaults and caskets	34,529	1,681,853
Cast stone	354,164	12,843,418	Laundry trays	60,455	1,620,920
Roofing tile	116,555	[2] 3,538,601	Lighting standards	13,776	1,171,620

[1] Including large sewer, machine-made, pressure, culvert, and irrigation pipe.
[2] In addition cement roofing tile (made of cement, sand, and coloring materials) valued at $476,075 was reported by manufacturers of special roofing materials.
Source: Bureau of the Census.

Considerable advance was made in the art of concrete mixing during 1927, furthered by studies in the water-cement strength relation and also with regard to shape, size, quality, and kind and grading of the aggregate. The practicability of producing appreciably better concrete has been demonstrated, and the rules for studied proportioning in concrete road work have been accepted by a committee of the advisory board for highway research of the National Research Council.

BRICK AND OTHER CLAY BUILDING MATERIALS

The census classification of industries engaged in the manufacture of clay products (other than pottery) and nonclay refractories embraces all establishments engaged primarily in the manufacture of brick, draintile and other tile, sewer pipe, stove lining, terra-cotta products, and other refractories both clay and nonclay. Although the census data indicate that there was less change in the position of the industry between 1923 and 1925 than during the intervals between previous census dates, there was an increase of 7 per cent in the output of common, vitrified, and face brick in 1925 in spite of a decrease of 2 per cent in the value of these products. (Table 22.) The value of products of the industry was about two and one-half times as great in 1925 as in 1914. The more extensive use of machinery was reflected by the increase of 17 per cent in primary horsepower installed as compared with an increase of only 2½ per cent in the

number of wage earners engaged in the industry during this period. The principal census data for the industry are given in Table 21.

Table 21.—Clay-Products (Other Than Pottery) and Nonclay Refractories

NOTE.—Includes brick, tile, and terra-cotta and fire-clay products. For 1921, 1923, and 1925, establishments reporting products under $5,000 in value were not included.

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1914	3,239	100,182	442,480	$54,907,418	$42,723,178	$135,921,445	$93,198,267
1919	2,414	76,915	405,157	78,256,085	67,488,113	208,422,920	140,934,807
1921	1,881	68,759	[1]	73,725,985	68,275,905	194,329,421	126,053,516
1923	1,983	102,723	480,576	123,773,001	103,317,550	333,416,331	230,098,781
1925	1,939	102,777	517,204	127,127,485	100,013,084	333,730,417	233,717,333

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Common, vitrified, and face brick, together, constituted about 42 per cent of the total value of products of this industry in 1926, the latest year for which production figures are available, while the various kinds of building tile represented another 18 per cent, and architectural terra cotta 6 per cent of the total. Although there was an increase of about 2 per cent in the aggregate value of all products of the industry, as compared with 1925, there was a slight decline in both the quantity and value of the production of brick and of several other less important building materials. Architectural terra cotta, tile, other than drain and hollow building tile, and fire brick are the only items listed in Table 22 of which the production in 1926 exceeded that in 1925, the increase of 29 per cent in the value of the output of tile being greatest.

Table 22.—Production of Principal Burned-Clay Building Materials

Year	Brick (millions)			Value (thousands of dollars)							
				Brick			Architectural terra cotta	Hollow building tile	Tile (not drain)	Sewer pipe	Fire brick
	Common	Vitrified [1]	Face	Common	Vitrified [1]	Face					
1913	8,089	959	828	50,135	12,138	9,614	7,733	8,620	6,109	14,872	16,811
1914	7,147	931	810	43,770	12,501	9,290	6,088	8,385	5,706	14,015	13,476
1915	6,851	953	856	42,145	12,231	9,536	4,796	7,801	5,186	11,259	15,800
1916	7,394	942	1,003	49,357	12,237	11,465	6,466	9,943	6,475	13,577	24,437
1917	5,865	707	758	47,936	10,665	10,391	6,174	13,255	6,821	17,307	42,502
1918	3,557	403	356	38,782	7,145	6,095	2,659	13,037	5,082	15,334	51,648
1919	4,752	489	791	63,585	11,615	16,033	3,988	17,965	8,137	16,755	38,016
1920	4,852	468	787	82,216	12,679	19,441	10,852	27,112	12,470	25,371	53,416
1921	4,448	562	873	57,096	12,870	18,128	9,068	14,841	12,560	22,155	24,833
1922	5,899	517	1,417	72,613	10,816	28,234	12,410	19,708	16,597	23,600	31,357
1923	7,282	699	1,931	94,473	15,570	38,892	16,486	28,275	23,804	29,103	46,677
1924	7,159	554	2,030	86,692	12,974	39,931	16,446	24,998	24,842	32,400	40,621
1925	7,562	539	2,475	88,551	11,876	45,428	19,139	29,264	27,124	30,421	41,164
1926	7,520	468	2,440	88,250	10,285	44,516	19,667	27,818	34,985	29,303	42,707

[1] Vitrified brick or block.

Sources: Bureau of the Census and Bureau of Mines, Department of Commerce.

Average bookings of new orders by manufacturers who produced 95 per cent of the total architectural terra cotta made in 1922 showed a decline of 8 per cent in quantity and 25 per cent in value in 1927 as compared with the preceding year. The output of face brick, as reported by 70 producers, increased 3 per cent, while shipments fell off less than 1 per cent. Producers of about 80 per cent of the total production of floor and wall tile in 1923 reported that production in 1927 was 2 per cent below that in 1926, while shipments fell off 4 per cent.

Prices.

The average wholesale price of common brick at 82 yards was about 11 cents more per thousand in 1927 than in 1926. This average, however, did not represent a uniform condition throughout the country, for there were wide variations in trend in the various sections. The average annual price of salmon brick at Chicago was about 2 per cent higher than the year before. The highest prices prevailed during the third quarter, when the average was $9.12 per thousand. The average wholesale price of red brick was slightly lower at Cincinnati and considerably lower at New York than in 1926, the average prices for the year being the lowest since 1917 and 1918 in the two markets, respectively. The Cincinnati price dropped a few cents during the first quarter and remained stationary during the rest of the year, while the New York price showed a constantly declining tendency in each succeeding quarter throughout the year.

Table 23.—Wholesale Prices of Common Brick, Per Thousand

Year	Salmon, Chicago	Red, Cincinnati	Red, New York	Average, 82 yards [1]	Quarter	Salmon, Chicago	Red, Cincinnati	Red, New York	Average, 82 yards
1913	$4.94	$7.00	$6.56	$6.20	1926				
1917	4.95	8.44	8.89	8.17	January–March	$8.58	$12.50	$16.67	$13.96
1918	7.45	12.94	11.93	10.90	April–June	8.68	12.50	17.00	13.90
1919	8.95	13.58	15.96	14.01	July–September	8.85	12.50	16.67	13.90
1920	11.44	17.47	21.85	18.95	October–December	8.78	12.33	15.50	13.88
1921	9.33	16.94	15.21	15.76					
1922	8.71	13.16	17.34	13.70	1927				
1923	8.76	14.05	19.81	14.51	January–March	8.84	12.08	17.00	14.11
1924	8.78	13.95	17.04	14.46	April–June	8.93	12.00	15.17	14.05
1925	8.61	12.63	14.70	14.01	July–September	9.12	12.00	11.75	13.98
1926	8.72	12.46	16.46	13.91	October–December	8.74	12.00	11.58	13.95
1927	8.92	12.02	13.88	14.02					

[1] For the years 1913 to 1918, inclusive, the price quotations were for a varying number of yards.
Source: Bureau of Labor Statistics, Department of Labor.

Foreign Trade.

Clay building materials do not enter, to any great extent, into foreign trade. Exports of brick and tile and earthenware plumbing fixtures were valued at approximately $4,365,000 in 1926 and $4,775,000 in 1927. Of these, fire-clay brick, refractory shapes, wall and floor tile, and earthenware plumbing fixtures were greater

during 1927, while exports of building brick and hollow tile and refractory brick (other than fire-clay brick) declined. Exports of building brick and hollow tile have declined steadily both in quantity and value since 1923, but the export price per thousand has shown a slight upward trend during the past two years.

Imports of brick and tile, which were three times as great in value in 1926 as in 1925, declined about one-fourth during 1927 and were less than half as great as exports. The importation of several cargoes of Belgian brick caused some concern among Hudson River producers. The value of 94,572,000 brick imported free in 1927 was $538,000, the value of dutiable brick imports amounted to $138,000, and imports of 5,255,000 square feet of tile were valued at $1,077,000.

WALL PLASTER, WALL BOARD, AND FLOOR COMPOSITION

Despite the fact that establishments manufacturing wall board, other than gypsum wall board, were not included in the wall-board classification prior to the census of 1923, the more general use of wall board in recent years makes it seem likely that the apparent increase in the industry, indicated by the figures in Table 24, is not greatly exaggerated. The value of products amounted to $90,957,000 in 1925, an increase of 23 per cent as compared with 1923. The increase in the capacity of the industry during this period is shown by increases in the number of establishments, number of wage earners, and primary horsepower of 14 per cent, 18 per cent, and 32 per cent, respectively.

The principal products of this industry are gypsum plaster and other ready-mixed wall plasters and similar preparations, such as hard wall plaster, plaster wainscoting, fiber plaster, stucco, calcined plaster, molding plaster, plaster board, asphalt mastic, and ornamental plasterwork for interior decoration; gypsum and other wall boards; and floor composition.

Table 24.—The Wall Plaster, Wall Board, and Floor Composition Industry[1]

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1914	165	5,389	36,599	$3,453,450	$7,992,749	$16,544,475	$8,551,726
1919	161	5,123	32,356	5,833,617	11,821,465	26,874,657	15,053,192
1921	144	4,898	(2)	6,997,050	16,116,801	32,353,697	16,236,896
1923	195	9,289	62,520	14,893,572	33,124,267	73,800,539	40,676,272
1925	222	10,978	82,863	16,078,362	39,553,463	90,957,045	51,403,582

[1] For censuses prior to 1923 the statistics for wall board, other than gypsum wall board, were included with those for "Pulp goods;" the statistics for 1921 and earlier years are, therefore, not strictly comparable with those for later years.

[2] Not called for on schedule

Source: Bureau of the Census.

In addition to the output of plants specializing in these products, wall plaster, wall board, and floor composition were manufactured to some extent by establishments engaged primarily in other industries. The value of the commodities thus produced constitutes about 1 per cent of the total value of products, amounting to $673,000 in 1923 and to $769,000 in 1925.

Gypsum is one of the principal materials used in this industry. During 1926 one of the outstanding features was the steady increase in the demand for gypsum specialties, notably wall board. The expansion of the gypsum industry extended to virtually every section of the country and included the opening of new mines and the erection of plants for the manufacture of gypsum products. Plants equipped for the manufacture of wall board were running at virtually full capacity, and the unprecedented demand for this product was well cared for. Several of the plaster-making plants along the west coast and through the Mountain States during the latter part of the year were considering the expansion of their plants and the addition of machinery for making wall board.

The total value of imports of gypsum and gypsum products amounted to $1,392,000 in 1927, 6 per cent less than in 1926. Crude gypsum, the bulk of which came from Canada, constituted 86 per cent of these imports. Exports of gypsum and manufactures, including wall board, were valued at $715,000 in 1927 and at $797,000 in 1926. In addition to gypsum products, exports of paper or pulp wall board amounted to $1,506,000 in 1927 and $879,000 in 1926.

GLASS

The glass industry, according to the classification of the Bureau of the Census, embraces all establishments engaged in the manufacture of glass from raw materials and also includes the reworking of glass when carried on in the same establishment in which the glass is manufactured. The products of the industry are grouped according to their uses as plate glass, building glass, pressed and blown glass, and bottles, jars, etc. Statistics of the glass industry from 1914 to 1925 are shown in Table 25.

The course of the industry, as indicated by the principal census data, has been one of alternate rise and fall in successive periods since 1914. Primary horsepower alone showed a continuous increase during the years for which figures are available, and cost of materials did not decline between 1923 and 1925, as did the other items. Although, in 1925, there was a smaller number of establishments and of wage earners than in 1914, horsepower showed an increase of 67 per cent; wages increased 78 per cent; cost of materials, 147 per cent; value of products, 140 per cent; and the value added by manufacture, 136 per cent.

Table 25.—The Glass Industry

NOTE.—Data for establishments with products under $5,000 in value included for 1914 and 1919, but not for subsequent years.

Year	Establishments	Wage earners (average number)	Horsepower	Wages	Cost of materials	Value of product	Value added by manufacture
1914	348	74, 502	162, 934	$48, 655, 819	$46, 016, 504	$123, 085, 019	$77, 068, 515
1919	371	77, 520	207, 338	87, 526, 625	90, 780, 124	261, 884, 080	171, 103, 956
1921	329	54, 748	(1)	68, 224, 248	86, 036, 406	213, 471, 309	127, 434, 903
1923	333	73, 335	240, 528	89, 897, 948	113, 170, 262	309, 353, 411	196, 183, 149
1925	310	69, 371	271, 639	86, 735, 571	113, 652, 436	295, 959, 424	182, 306, 988

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Quantitative production has increased steadily since 1921. A glance at the changes in quantity and value of products of the glass industry between 1923 and 1925, as presented in Table 26, shows that the output measured in thousands of square feet was greater during the later year for all items, excepting rough wire glass, for which the decline was less than one-half of 1 per cent. Contrasted with this increase in output, the value of products of the most important items, including plate glass and window glass, was lower during 1925.

Table 26.—Production of Glass

Class	Quantity (thousands of square feet)				Value (thousands of dollars)			
	1914	1921	1923	1925	1914	1921	1923	1925
Total					**123, 085**	**213, 471**	**309, 353**	**295, 959**
Plate glass:								
Total cast	75, 770	79, 966	124, 780	165, 380				
Polished	60, 384	56, 239	94, 470	117, 369	14, 774	37, 261	66, 103	57, 207
Rough (sold as such or on hand)	131	712	2, 806	4, 215	26	107	501	504
Window glass	400, 999	260, 065	510, 215	567, 151	17, 496	24, 026	42, 623	37, 525
Obscured glass [1]	43, 040	20, 901	46, 376	53, 951	2, 417	2, 547	5, 114	6, 916
Wire glass:								
Polished	1, 708	2, 211	2, 805	4, 165	534	1, 209	1, 652	2, 264
Rough (sold as such or on hand)	13, 981	13, 949	28, 802	28, 743	1, 057	2, 108	3, 882	3, 546
Pressed and blown glass (except bottles and jars)					30, 279	55, 718	77, 279	72, 086
Bottles and jars					51, 959	85, 743	107, 231	100, 301
All other products [2]					4, 543	4, 752	4, 969	15, 611

[1] Includes cathedral and skylight glass, and opalescent sheet glass.

[2] Building glass (other than plate, window, obscured, and wire glass), spectacle glass, boxes, and other containers, etc.

Source: Bureau of the Census.

Included in the 1925 production of pressed and blown glass (except bottles and jars) was $20,000,000 worth of bulbs, shades, globes, and other illuminating glassware, constituting 28 per cent of the group total. The indicated decline in the price of glass products between 1923 and 1925 is substantiated by the wholesale prices of both plate glass and window glass as published by the Bureau of Labor Statistics. During the last two years the price of plate glass declined still further and averaged lower in 1927 than for any year since 1917,

while that of window glass increased slightly in 1926, only to fall in 1927 to a level about midway between that of 1916 and 1917.

Data of production of plate glass, compiled by the Plate Glass Manufacturers of America, comprising practically the entire industry, indicate that the quantitative output of polished plate glass increased 10 per cent to 128,858,000 square feet in 1926 and fell off 14 per cent to 111,390,000 square feet in 1927. Since about one-half the total output of plate glass is consumed by the automobile industry, much of the decline during the year 1927 was probably owing to the decline in automobile production.

Exports of common window glass, plate glass, and glass globes and shades for lighting fixtures were valued at about $1,500,000 in 1927, an increase of 16 per cent over the previous year. Imports of plate glass, on the other hand, amounted to 16,786,000 square feet, valued at $4,642,000, a decrease of 37 per cent in quantity and 52 per cent in value as compared with 1926. The value of imports of unpolished cylinder, crown, and sheet glass was also 10 per cent lower in 1927.

STONE

The total value of stone used for construction purposes in 1926, the latest year for which figures are available, was $156,306,000, an increase of 9 per cent as compared with the preceding year. Of the total, the value of crushed stone, used chiefly in concrete, was the most important item and its production had more than doubled in quantity since 1920. Building stone, flagstone, riprap, and crushed stone showed increased demand during 1926. Stone for monumental and memorial work and for paving blocks was in slightly less demand, but demand for curbing and for rubble decreased decidedly.

Operating costs in 1926 were about the same as in 1925, according to the Bureau of Mines, and prices remained about the same, but with an upward trend for stone for high-grade construction and for monumental work. Labor conditions were little changed, and the effort to standardize products and to improve quarry methods was continued.

Table 27.—Production of Stone for Construction Purposes

Class	Quantity (thousands of units specified)				Value (thousands of dollars)			
	1923	1924	1925	1926	1923	1924	1925	1926
Total					127,731	134,745	143,769	156,306
Building stone, cubic feet	26,417	28,352	30,695	33,467	32,023	33,176	35,445	39,923
Monumental stone, do	5,100	4,751	4,371	4,336	16,130	15,305	14,404	14,581
Paving blocks, number	45,866	41,038	40,143	39,563	4,003	3,579	3,681	3,400
Curbing, cubic feet	3,228	3,816	5,076	4,410	2,936	3,469	4,313	4,303
Flagging, do	608	810	762	902	422	560	562	657
Rubble, short tons	882	865	1,197	540	1,298	1,160	2,061	917
Riprap, do	3,186	3,265	3,079	4,060	2,989	3,634	2,794	4,653
Crushed stone, do	62,323	68,198	75,673	82,516	67,929	73,862	80,508	87,872

Source: Bureau of Mines, Department of Commerce.

The crushed stone sold or used by producers in 1926 amounted to 82,516,000 short tons, valued at $87,872,000, of which limestone constituted 68 per cent of the quantity and 65 per cent of the value. The principal uses for crushed stone are for concrete and road metal and for railroad ballast, the distribution in 1926 being 66,893,000 tons to the former and 15,623,000 tons to the latter. Stone for concrete and road metal increased 6 per cent in quantity and 7 per cent in value, while stone for railroad ballast increased 22 per cent in both quantity and value.

In 1926 a special inquiry was made by the Bureau of Mines to ascertain the shipment of crushed stone according to methods of transportation. Although the replies were not entirely satisfactory, they indicated that about 57 per cent was shipped on railroads, 27 per cent by motor trucks, 15 per cent by boat or barge, and 1 per cent by teams, trams, and other means. Railroad hauls ranged from 20 to 300 miles, boat hauls from 20 to 350 miles, and truck hauls from 1 to 25 miles.

Sales of building stone, the second most important item in point of value, increased 9 per cent in quantity and 13 per cent in value in 1926. Although only a small part of the annual output of limestone is used for building stone, properly speaking, it represents 55 per cent of all building stone. Building limestone reached a high production level in 1926 with a record quantity of 18,538,000 cubic feet, valued at $20,392,000, sold or used by producers, an increase of 16 per cent in quantity and 27 per cent in value as compared with 1925.

The high-grade limestone classed as architectural limestone is obtained from a few well-known localities. The largest quarry center for building limestone in the United States is the Bedford-Bloomington district in Lawrence and Monroe Counties, Indiana. In 1926 the output of building limestone in this district increased 20 per cent.

In point of quantity, building is the principal use of granite, but that used for monumental purposes was more than 50 per cent greater in value in both 1925 and 1926. The 8,182,000 cubic feet of granite, valued at $6,884,000, used for building purposes provided 24 per cent of the quantity of building stone sold and used by producers in 1926 and represented an increase of 9 per cent in quantity and 1 per cent in value over 1925. The value of granite produced in Massachusetts and Vermont is greater than in any other State, but California and North Carolina lead in quantitative production.

Exports of stone in 1927 were valued at $2,095,000, an increase of 22 per cent as compared with 1926. Canada received about 55 per cent of these exports and Cuba 31 per cent. The value of stone imported for consumption in 1927 was $4,546,000, 29 per cent greater than in 1926. More than three-fifths of the value of imports consisted of Italian marble.

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SAND AND GRAVEL

The production of sand and gravel reported sold or used by producers in 1926 exceeded that of any previous year in both quantity and value. The total of 183,101,000 short tons, valued at $111,339,000, represented an increase of 6 per cent in quantity and 4 per cent in value as compared with 1925. The quantity of building sand produced was nearly the same in both years, but production of building gravel was 7 per cent less during the later year. The increase in the production of paving and road-making sand and gravel and of that used for ballast and fills by railroads more than offset this loss. About one-half of the total production of sand as well as one-third of the production of gravel was for building purposes.

Table 28.—Production of Sand and Gravel

Material	Quantity (thousands of short tons)					Value (thousands of dollars)				
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926
Building sand	29,375	39,235	41,376	45,287	45,328	17,575	23,751	23,455	26,306	24,891
Paving sand	10,670	15,632	20,708	24,877	27,477	6,482	9,187	11,595	13,659	14,971
Building gravel	18,686	24,145	30,487	32,759	30,535	14,541	18,368	22,719	24,590	22,702
Paving gravel	17,432	26,174	28,830	32,575	38,319	11,374	17,717	18,774	21,412	25,445
Railroad ballast (gravel)	9,054	22,247	[1] 21,341	[1] 19,486	22,132	3,233	6,346	[1] 6,676	[1] 6,392	7,516

[1] Includes some gravel used for fills and other purposes by the railroads.
Source: Bureau of Mines, Department of Commerce.

There was a slight downward trend in the average value for the different classes of sand in 1926, as compared with the year before, but the value of gravel was more stable, with only a slight decrease in the value of building gravel. The average value per ton for the total output of sand and gravel in 1926 was 61 cents as compared with 63 cents in 1925.

Imports and exports of sand and gravel are relatively small and are carried for the most part as ship ballast between the United States and Canada. About 736,000 short tons, valued at $303,000, were imported in 1927, and 422,000 tons, valued at $558,000, were exported.

LIME

Since 1922 the building industry has provided a market for more than one-half the lime produced in the United States, as indicated in Table 29, the balance being used for agricultural and chemical purposes. Sales of lime by producers for all purposes in 1926 amounted to 4,560,000 short tons, valued at $41,566,000, a decrease of less than 1 per cent in quantity and but 2 per cent in value from the record production of 1925. The sale of 2,320,000 short tons of lime for building purposes in 1926 represented a decrease of 3 per cent from 1925. Ohio and Pennsylvania are the largest producers of lime

for construction. In 1926 about two-thirds of the building lime from Pennsylvania was quicklime, whereas 96 per cent of the building lime furnished by Ohio was hydrated lime, a part of which was high-grade finished lime.

The total number of plants that reported operation was 15 less than in 1925, largely because many fields in Pennsylvania were idle. Labor conditions in plants changed little during the year and wages and cost of materials were about the same as during 1925. A continuing tendency toward lower prices appeared in the decline of the average value (at the plants) of lime sold from $9.30 to $9.11 per ton. The average value of building lime per ton was 9 cents lower than in 1925.

The production of hydrated lime, included in the totals in the table, in 1926 amounted to 1,607,000 short tons, valued at $15,182,000, and in 1925 to 1,561,000 tons, valued at $15,287,000. About three-quarters of the hydrated lime is sold for building purposes. Slightly smaller sales of hydrated lime for construction were reported in 1926.

Table 29.—Lime Production

Year	Plants in operation	Lime sold by producers					
		For all purposes			For building purposes		
		Quantity	Value [1]		Quantity	Value [1]	
			Total	Per ton		Total	Per ton
		Short tons			*Short tons*		
1920	515	3,570,141	$37,543,840	$10.52	1,305,412	$15,269,683	$11.70
1921	520	2,532,153	24,895,370	9.83	1,239,486	13,258,443	10.70
1922	530	3,639,617	33,255,039	9.14	1,845,208	18,463,825	10.01
1923	467	4,076,243	39,993,652	9.81	2,131,533	22,521,638	10.57
1924	450	4,072,000	39,596,423	9.72	2,169,700	23,011,935	10.61
1925	450	4,580,823	42,609,141	9.30	2,387,267	24,115,420	10.10
1926	435	4,560,398	41,566,452	9.11	2,320,323	23,227,034	10.01

[1] Represents the value of bulk lime f. o. b. at point of shipment and does not include cost of barrel or package.

Source: Bureau of Mines, Department of Commerce.

STRUCTURAL STEEL

The increasing importance in the construction industry of structural steel is indicated by the increase in the production of unfabricated structural shapes from 2,250,000 long tons in 1910 to almost 4,000,000 tons in 1926. (See Table 11, section on Metals.) Valued at $43.70 a ton in 1926, the total output was worth approximately $175,000,000. Production in 1927 declined to about 3,750,000 tons. Of this annual production of structural steel about two-thirds is used in the construction of railroad and other buildings and bridges, while the remaining one-third is consumed by a variety of other uses. (See Table 6, section on Metals.)

Production and Price Movement.

Since the cutting to specifications, shaping, and assembling of the plain structural steel is done in structural ironworks, in order to expedite the actual labor of construction, the movement of these fabricated products may be taken as an index of the activity of the structural-steel industry. Although new orders for fabricated structural steel totaled 3,060,000 short tons in 1927 and exceeded those in any previous year, actual shipments were less than in either 1925 or 1926, amounting to only 2,857,500 short tons, a decrease of 11 per cent as compared with the preceding year. In 1926 shipments exceeded new orders by 11 per cent, whereas in 1927 new orders were greater than shipments by 7 per cent.

The price of structural steel beams at Pittsburgh, as reported by the Bureau of Labor Statistics, showed a slightly declining trend during 1927 and averaged lower than for any year since 1922. The average price for the year was $1.85 per hundred pounds, or 10 cents less than for 1926. The average monthly price was $2 per hundred pounds in January and, after slight fluctuations from month to month, reached the lowest average of the year in November, $1.75 per hundred pounds, which was followed by a rise to $1.80 in December. Structural steel prices declined but little more than 5 per cent in 1927, indicating a fairly stable condition of the market.

Table 30.—New Orders for Fabricated Steel

[Quantities in short tons]

Year	New orders	Per cent of capacity	Month	1922	1923	1924	1925	1926	1927
1913	1,215,000	45	January	121,600	227,760	224,940	187,380	208,800	195,000
1914	1,422,720	52	February	133,760	243,360	228,200	194,320	208,800	243,750
1915	1,995,840	72	March	234,080	290,160	221,680	225,550	234,000	232,500
1916	2,056,320	72	April	258,400	243,360	208,640	256,780	252,000	262,500
1917	1,713,360	59	May	240,160	180,960	192,340	229,020	266,400	232,500
1918	1,733,760	56	June	221,920	165,360	208,640	284,540	262,800	228,750
1919	1,723,680	54							
1920	1,788,480	54							
1921	1,188,600	35	July	206,720	162,240	221,680	274,130	248,400	345,000
1922	2,334,720	64	August	206,720	184,080	192,340	267,190	284,400	273,750
1923	2,442,960	65	September	194,560	165,360	211,900	270,660	216,000	262,500
1924	2,640,600	68	October	176,320	159,120	211,900	298,420	230,400	288,750
1925	2,980,730	72	November	152,000	171,600	270,580	239,430	223,200	236,250
1926	2,890,800	67	December	185,440	249,600	247,760	253,310	255,600	258,750
1927	3,060,000	68							

Source: Bureau of the Census, Survey of Current Business (which lists original sources and method of calculating per cent of capacity).

Foreign Trade.

Exports of both plain and fabricated structural steel in 1927 were less in both quantity and value than during 1926. Approximately 148,000 long tons of plain shapes, valued at $6,554,000, and 69,000 long tons of fabricated shapes, valued at $5,912,000, were exported during 1927. (See Table 20, section on Metals.) The relative decline was greater in value than in quantity, and the average export prices

computed from the declared valuations were lower than the year before by 9 per cent in the case of plain shapes and by 5 per cent in the case of fabricated shapes.

Imports of structural shapes, on the other hand, were not only greater than in 1926 but were almost four times as great as in 1924. About 162,000 long tons of foreign structural steel, valued at $5,532,000, were imported in 1927 as compared with 121,000 tons, valued at $3,923,000 in the preceding year. While our own unit export values declined, the unit import values of foreign structural steel increased about 6 per cent. (See Table 23, section on Metals.)

SIMPLIFICATION OF BUILDING MATERIALS

So far there have been completed 28 simplified practice recommendations, other than the lumber recommendation, in the building material field, covering a wide range of products and eliminating many thousands of individual items by effecting reductions of from 4 to 98 per cent. Of this number, recommendations on solid section steel windows and composition blackboard were promulgated during 1927.

Iron and steel products are represented by agreements for metal lath, sheet steel, terneplate, eaves trough and conductor pipe, steel reinforcing bars and steel spiral rods for reinforcing concrete, and solid section steel windows. Hardware, plumbing, and related fields are represented by builders' hardware, range boilers, hot-water storage tanks, cut tacks and small cut nails, brass lavatory and sink traps, and wrought-iron and wrought-steel pipes, valves, and fittings. Among quarry and various miscellaneous products are structural slates for plumbing and sanitary purposes, roofing and blackboard slates, composition blackboard, sidewalk lights, asphalt, and asbestos paper and millboard. Concrete building units represent another series of simplifications, and in the field of clay products are agreements covering paving brick, rough and smooth face brick, common brick, sand-lime brick, vitreous china plumbing fixtures, white glazed tile and unglazed ceramic mosaic, and hollow building tile.

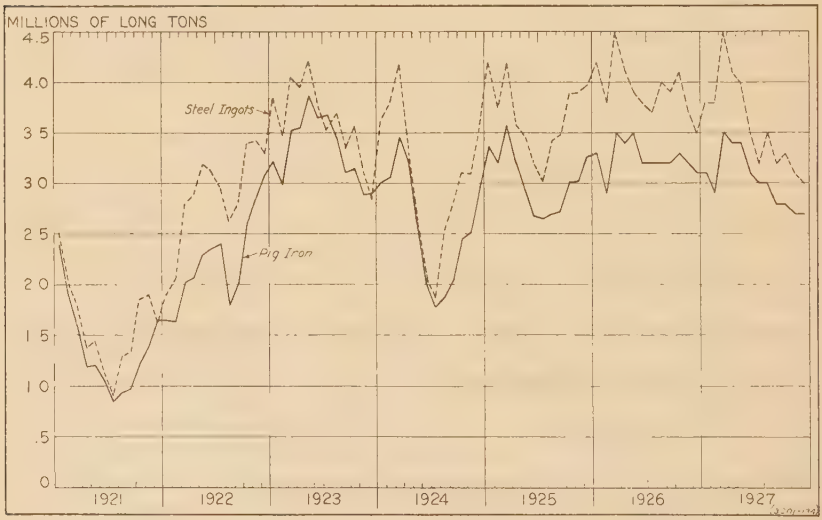
It has been found that the general adoption of and adherence to simplified practice recommendations in this field make possible economies in the manufacture of the commodities, which mean actual savings in costs of construction to the consumer. During 1927 there were 12 recommendations reviewed by the respective standing committees to determine the degree of adherence accorded the recommendation. In the case of recommendations for terneplate, metal lath, range boilers, and roofing slates, adherence was found to be almost universal. As compared with 1926, there was a marked increase in 1927 in the degree of adherence accorded recommendations for sheet steel and sand-lime brick, and a smaller increase for hollow building tile.

METALS

IRON AND STEEL

SUMMARY.—The American iron and steel industry did not enjoy quite so favorable a year during 1927 as it had during 1925 and 1926. The extraction of iron ore during 1927 was smaller than in 1926 by 8.7 per cent and shipments of this product declined 11.6 per cent in tonnage. The output of pig iron and ferro-alloys totaled 36,566,000 gross tons and steel ingots and castings 44,935,000 tons, both decreasing 7 per cent as compared with the preceding year. The peak production of pig iron and steel ingots occurred in March and the output of both

Chart I.—MONTHLY PRODUCTION OF PIG IRON AND STEEL INGOTS



declined to a low level in the last two months of the year. Production of rolled products also declined during 1927.

Prices quoted on iron and steel products were generally lower in 1927 than in 1926. The price of basic pig iron at Pittsburgh averaged 12.6 per cent below the 1926 level and the Pittsburgh price for steel bars declined 8 per cent. The average composite index price for finished steel products declined 3.4 per cent.

Exports of iron and steel products were slightly larger in 1927 than in 1926; increased trade with Europe and Asia more than offset decreases in shipments to North and South America. Exports to Canada, our leading foreign market, remained approximately the same as in the preceding year, while shipments to Japan, China, Italy, and Argentina increased considerably. Imports of iron and steel were 30 per cent smaller than in 1926.

Table 1.—Iron and Steel Summary

[Thousands of long tons, except prices which represent dollars per long ton]

Item	1910–1914 average	1922	1923	1924	1925	1926	1927	Per cent change, 1927 from 1926
Iron ore shipments	50,851	50,640	69,811	52,083	63,925	69,293	61,232	−11.6
Production of:								
Pig iron and ferro-alloys	26,996	27,220	40,361	31,406	36,701	39,373	36,566	−7.1
Steel ingots and castings	27,167	35,603	44,944	37,932	45,394	48,294	44,935	−7.0
Average price of:								
Basic pig iron at Pittsburgh	[1] $15.68	$26.13	$27.66	$22.06	$21.52	$20.30	$17.75	−12.6
Open-hearth steel sheet bars	[1] $26.85	$34.55	$42.53	$39.68	$36.38	$36.04	$34.08	−5.4
Composite steel products	$35.08	$49.73	$61.33	$58.44	$55.22	$54.63	$52.80	−3.4
Total exports	2,194	1,995	2,010	1,806	1,763	2,167	2,183	+.7
Total imports	321	719	742	566	933	1,071	750	−30.0

[1] For year 1913.

GENERAL POSITION AND CHARACTER

The United States surpasses all other countries in the quantity of the iron and steel which it produces, its annual output representing approximately one-half that of the entire world. Of this quantity by far the greater proportion is consumed within this country, so that exports, although very considerable in actual tonnage, make up but a small proportion of production. Imports bulk even smaller by this comparison. The industry is, for the most part, highly integrated, and many concerns operate the mines from which their supply of ore is taken, the plants and furnaces which convert it into pig iron and crude steel, and the rolling and finishing mills which process it to a finished state. The more elaborate fabrications of iron and steel are treated in sections relating to machinery, automotive products, farm implements, and construction materials.

Census Statistics.

The two principal branches of the industry are blast furnaces and steel works and rolling mills. These are the only branches for which comparable census data are available for a considerable series of years. Table 2 includes data for blast furnaces and steel works and rolling mills for every census year since 1899 and data for other branches of the industry in 1925.

The cost of materials and value of products involve much duplication between the two major branches and also between the steel works and the smaller branches; there is even some duplication within the industry of steel works and rolling mills itself. The value added by manufacture is, however, a net figure, as it is obtained by deducting the cost of materials from the value of products. Manufacturers' profits can not be calculated from the census figures for the reason that no data are collected in regard to a number of expense items. The values have been greatly affected by price changes, but the activity of the basic industry during the years 1919, 1923, and 1925, and the severe depression in 1921 are clearly indicated.

Table 2.—Census Statistics of the Iron and Steel Industry

Branch of industry and year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				Thousands of dollars			
Blast furnaces:							
1899	223	39,241	497,272	18,484	131,504	206,757	75,253
1909	208	38,429	1,173,422	24,607	320,638	391,429	70,791
1914	160	29,356	1,222,273	22,781	264,580	317,654	53,074
1919	195	41,660	1,581,432	73,769	621,287	794,467	173,180
1921	134	18,698	(1)	29,370	361,049	419,771	58,722
1923	169	36,712	1,832,919	58,935	827,630	1,007,613	179,984
1925	122	[2] 29,188	1,380,394	[2] 45,312	617,417	765,286	147,869
Steel works and rolling mills:							
1899	445	183,249	1,100,801	102,336	390,895	597,212	206,317
1909	446	240,076	2,100,978	163,201	657,501	985,723	328,222
1914	427	248,716	2,706,553	188,142	590,826	918,665	327,839
1919	500	375,088	3,820,917	637,637	1,680,576	2,828,902	1,148,326
1921	494	235,515	(1)	324,987	1,005,125	1,481,659	476,534
1923	489	388,201	(3)	637,825	2,044,398	3,154,325	1,109,926
1925	473	370,726	4,763,533	614,985	1,811,961	2,946,068	1,134,107
Other branches, 1925:							
Cast-iron pipe	77	23,033	54,820	27,438	48,847	100,388	51,541
Forgings	218	20,290	120,014	31,313	68,081	134,511	66,430
Hardware	476	52,349	98,278	65,562	77,503	225,053	147,550
Heating and cooking apparatus	789	89,774	203,439	130,279	173,230	493,233	320,003
Plumbers' supplies	239	33,280	84,534	46,954	63,610	167,878	104,268
Structural iron work	1,136	48,341	211,732	77,411	237,653	420,998	183,345
Tools and cutlery	211	16,407	51,673	20,226	20,562	80,263	59,701
Tinware	221	29,901	48,728	34,392	175,779	260,360	84,581
Wire	68	18,544	138,115	26,928	127,251	184,463	57,212
Wrought pipe	42	10,871	41,306	17,157	59,142	94,695	35,553

[1] Not called for on schedule for 1921.
[2] The statistics for wage earners and wages for 1925 are not strictly comparable with those for 1923 for the reason that some of the blast-furnace operators included data in their 1923 reports for wage earners engaged in relining blast furnaces but did not include corresponding data in their reports for 1925.
[3] No comparable data.
Source: Bureau of the Census.

Iron Ore Production and Trade.

The great bulk of the iron ore used by the domestic iron and steel industry is mined within the United States, although considerable tonnage is imported, principally from Chile, Algeria and Tunisia, and Cuba. In 1927 the iron ore mined in the United States, exclusive of ore containing 5 per cent or more of manganese in the natural state, is estimated by the Bureau of Mines at 61,741,000 gross tons (Table 3), a decrease of 8.7 per cent as compared with 1926. The ore shipped from the mines in 1927 is estimated at 61,232,000 tons, valued at $151,125,000, decreases of 11.6 per cent and of 13.2 per cent, respectively, in comparison with 1926. Of the ore shipped, about 84 per cent came from the Lake Superior district.

Imports of iron ore increased slightly both in quantity and value during 1927 and aggregated 2,621,000 tons, valued at $6,068,000. Exports of iron ore also increased, totaling 899,000 tons, valued at $3,425,000.

Table 3.—Iron Ore Production, Shipments, Exports, and Imports

[Quantities in thousands of long tons; value in thousands of dollars]

Yearly average or year	Production				Shipments		Exports [1]		Imports	
	Total	Lake Superior	Birmingham	All other	Quantity	Value	Quantity	Value	Quantity	Value
1881–1890	10,385	4,243	(2)	6,142					766	
1891–1900	17,551	11,665	(2)	5,886					587	
1901–1910	41,339	32,422	(2)	8,917			271	809	1,180	3,121
1911–1915	51,595	42,956	4,172	4,467			853	2,736	1,841	5,783
1916–1920	69,737	59,450	5,404	4,883	70,224	229,370	1,143	4,842	967	3,807
1921–1925	52,429	44,240	5,327	2,863	52,617	160,080	677	2,994	1,691	6,955
1920	67,604	57,861	5,220	4,523	69,281	285,006	1,145	6,199	1,273	4,964
1921	29,491	25,298	2,728	1,465	26,653	89,745	440	2,078	316	1,076
1922	47,129	39,716	4,711	2,702	50,613	157,809	602	2,771	1,135	4,916
1923	69,351	59,285	6,047	4,019	69,811	240,739	1,117	5,305	2,768	11,309
1924	54,267	44,842	6,511	2,914	52,083	151,307	595	2,407	2,047	10,581
1925	61,908	52,057	6,636	3,215	63,925	160,797	631	2,411	2,191	6,895
1926	67,623	57,143	6,508	3,971	69,293	174,016	869	3,381	2,555	5,876
1927	61,741	51,540	6,295	3,906	61,232	151,125	899	3,425	2,621	6,068

[1] Nearly all exports are to Canada. [2] Birmingham included in "All other."

Source: Bureau of Mines, Department of Commerce.

PRODUCTION

Pig Iron and Crude Steel.

The 1927 production of both pig iron and crude steel was below that of either 1926 or 1925. The total of 36,566,000 gross tons of pig iron and ferro-alloys melted and 44,935,000 tons of steel ingots and castings poured during the year were both 7 per cent less than in the preceding year. (Table 8.)

Table 4.—Monthly Production of Pig Iron and Steel Ingots

[Thousands of long tons]

Month	Pig iron						Steel ingots					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927[1]
January	1,646	3,228	3,015	3,372	3,320	3,101	1,892	3,841	3,650	4,193	4,132	3,790
February	1,630	2,994	3,074	3,214	2,924	2,941	2,072	3,471	3,826	3,752	3,785	3,812
March	2,036	3,524	3,465	3,571	3,458	3,482	2,815	4,067	4,207	4,194	4,469	4,535
April	2,070	3,546	3,226	3,211	3,439	3,424	2,902	3,964	3,348	3,584	4,106	4,127
May	2,309	3,869	2,620	2,934	3,478	3,391	3,219	4,216	2,640	3,455	3,928	4,047
June	2,363	3,668	2,023	2,679	3,232	3,090	3,128	3,767	2,066	3,204	3,734	3,496
July	2,403	3,685	1,783	2,665	3,225	2,955	2,953	3,531	1,878	3,084	3,635	3,204
August	1,811	3,449	1,883	2,707	3,201	2,951	2,629	3,696	2,553	3,421	3,987	3,499
September	2,024	3,118	2,054	2,726	3,163	2,783	2,818	3,357	2,828	3,490	3,913	3,269
October	2,630	3,143	2,462	3,018	3,334	2,812	3,410	3,577	3,125	3,889	4,075	3,316
November	2,846	2,891	2,515	3,023	3,238	2,662	3,430	3,134	3,121	3,903	3,706	3,127
December	3,084	2,913	2,956	3,249	3,089	2,680	3,300	2,863	3,569	3,971	3,467	3,175

[1] Beginning with 1927, the American Iron and Steel Institute excludes crucible and electric ingots, which totaled 378,974 tons for the year.

Sources: Iron Trade Review; American Iron and Steel Institute.

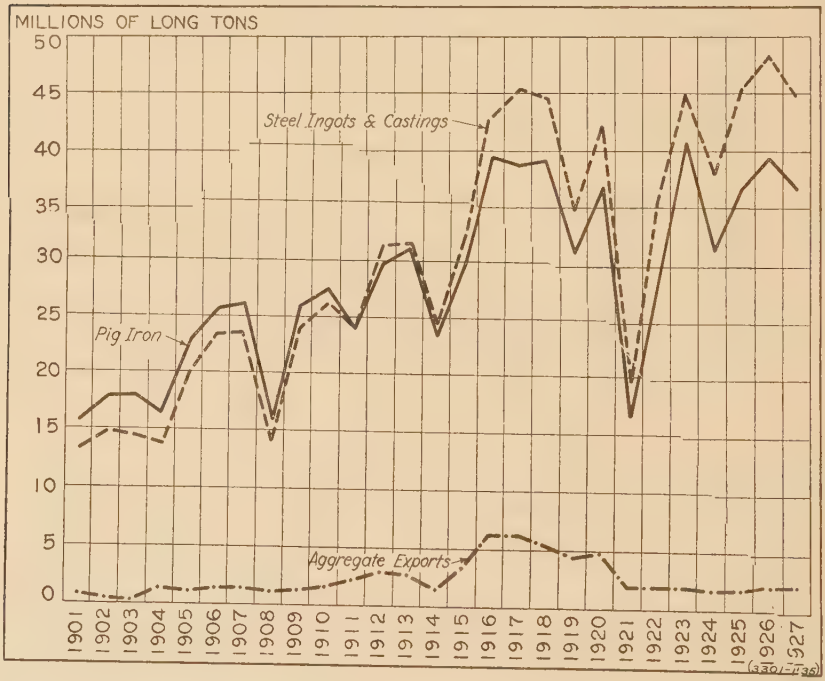
The monthly output of pig iron was relatively less uniform during 1927 than 1926. (Table 4 and Chart II.) The maximum monthly production, 3,482,000 tons, occurred in March, a rather usual sea-

sonal development, and exceeded by 31 per cent the minimum output of 2,662,000 tons reported for November. March output was 4,000 tons greater than the maximum of 1926. Steel production varied even more widely than did that of pig iron, with a maximum output of 4,535,000 tons in March and a minimum output of 3,127,000 tons in November. The maximum monthly output of steel ingots in 1927 exceeded that of 1926 by 66,000 tons.

Capacity, Activity, and Equipment.

The most recent estimates of the American Iron and Steel Institute place the annual pig-iron producing capacity of the United States at

Chart II.—PRODUCTION OF PIG IRON, STEEL INGOTS, AND CASTINGS, AND AGGREGATE EXPORTS OF IRON AND STEEL



49,808,320 gross tons, the steel-ingot-making capacity at 59,435,766 tons, and that for steel castings at 2,029,334 tons.

The greatest number of blast furnaces operating during 1927 was 223 at the end of March. This number dwindled, however, until at the end of the year only 170 furnaces were lighted. (Table 5.) The year brought further scrapping of obsolete blast-furnace capacity with a net loss of 14 stacks, reducing the total to 357 furnaces, of which only 122 can definitely be termed in the merchant class—that is, producing for sale rather than for the further use of the same concern. Only 39 of the merchant furnaces were in blast at the end

of the year and of the remainder many had been idle all year. Very little new furnace capacity is being built or is in project.

The most constructive development in manufacturing processes was the beginning of continuous sheet and strip manufacture on a large scale. Other developments recorded during the year were chiefly in the line of refinements in methods and processes of production and fabrication and in the extension of the employment of steel in new products—the manufacture of steel furniture, sanitary equipment, sash, and steel-frame dwellings being appreciably increased.

Table 5.—Pig-Iron Furnaces in Blast on the Last Day of Specified Month

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1921	184	155	103	96	90	74	69	69	84	95	120	123
1922	127	139	155	161	175	191	170	143	189	218	240	265
1923	261	278	295	311	322	322	299	270	254	245	231	231
1924	248	263	269	234	187	158	145	150	174	182	204	229
1925	251	256	246	221	196	191	188	192	200	209	220	233
1926	225	223	235	237	229	220	217	215	216	218	216	203
1927	210	218	223	221	211	198	190	189	181	174	171	170
Per cent of all furnaces: [1]												
1925	61.0	62.3	60.0	54.0	48.5	47.9	47.5	49.2	51.6	54.1	57.2	60.5
1926	58.5	58.5	62.4	63.0	60.9	59.1	58.4	57.8	58.2	58.5	57.7	55.0
1927	56.9	59.0	61.1	60.7	58.1	54.7	52.5	52.2	50.0	48.2	47.7	48.0

[1] For furnaces in blast 60 per cent is considered normal.

Source: Iron Trade Review.

Progress in Simplification.

During 1926 considerable progress was shown in the application of simplification to products of the iron and steel industry. A total of 21 simplified-practice recommendations were actually in effect, with several projects under consideration. In 1927 seven additional recommendations were completed through the cooperation of the industry and the Division of Simplified Practice, and 18 additional projects were under consideration. Recommendations were adopted during 1927 in regard to wrought-iron and wrought-steel pipes, valves, and pipe fittings, sizes of valves and fittings, sizes of pipe, spark plugs, piston-ring oversizes, roller bearings, turnbuckles, solid-section steel windows, and malleable foundry refractories.

Adherence to the various recommendations adopted by this industry has been very good, as is indicated by the following table, in which percentages are based on the volume of output:

Recommendations	Percentage of adherence		Recommendations	Percentage of adherence	
	1926	1927		1926	1927
Files and rasps	------	93	Range boilers	------	99
Steel barrels and drums	84	89	Woven wire fencing	97	99
Terneplate	86	100	Builders' hardware	83	83
Sheet steel	53	85	Hospital beds	69	69
Steel lockers	------	85	Eaves, trough, and conductor pipe	97	92
Metal lath	99	99			
Tinware, galvanized ware, and japanned ware	------	92			

Distribution of Finished Steel.

Figures for the total production of the individual classes of rolled and miscellaneous iron and steel products appear in Table 11. The total output for all classes of rolled products in 1927 was 32,879,000 long tons, which was 7.4 per cent less than the 1926 tonnage. The decrease in the total output of these products was shared by almost every class to some degree.

The distribution of the rolled products, as reported by companies controlling the greater part of the producing capacity, is indicated in Tables 6 and 7. Among these industry groups, building construction (other than bridges and structures for railroads) took the largest proportion, 14.9 per cent, showing an increase in its share of the total as well as an appreciable tonnage increase. The second largest consuming industry was automotive vehicles, which took 13.3 per cent of the total as against 15.1 per cent in 1926. Practically all of the other industry groups varied in the tonnage and percentage proportion of their takings of these products as compared with 1926. The groups gaining in their share of the total were building construction other than railroad, mining and lumbering, agricultural equipment, shipbuilding, machinery and hand tools, exports, and shipments made to jobbers and warehouses.

Table 6.—Distribution of Output of Finished Steel in 1927, by Consuming Groups and by Individual Products

[Based on reports of companies controlling 94.89 per cent of the country's steel ingot capacity in 1927, 93.32 per cent in 1926, 83.76 per cent in 1925, and 76.30 per cent in 1924. In thousands of long tons]

Consuming group	Rails and other track accessories	Plates	Structural shapes	Bars and shapes under 3-inch	Hoops, bands, and cotton ties	Black plates for tinning, and sheets	Tubing and pipe	Wire products	Other finished steel products
Railroad buildings and bridges	(1)	82	155	124	3	28	1	41	37
Highway work and other bridges	(1)	30	35	133	----	61	(1)	18	16
Other buildings	5	581	1,781	828	46	503	165	117	187
Railroad track work	3,152	15	1	56	(1)	----	(1)	33	14
Street railways	59	3	6	26	(1)	(1)	2	3	41
Automotive vehicles	(1)	159	30	1,316	321	1,153	59	132	600
Railroad cars and locomotives	(1)	682	235	434	11	205	54	17	239
Oil, gas, and water requirements	5	531	49	78	14	185	1,600	22	24
Mining and lumbering	144	16	16	39	6	18	5	20	12
Agricultural equipment	1	34	10	579	26	78	3	451	37
Metal containers	----	15	1	4	66	1,339	9	30	13
Shipbuilding	(1)	142	36	33	(1)	7	4	3	10
Machinery and hand tools	2	190	79	390	17	11	26	27	46
Exports	180	172	202	135	18	484	182	118	29
Jobbers and warehouses	44	137	216	494	41	683	1,160	694	134
All other requirements	33	187	137	463	79	794	135	534	326
Total, 1927	3,625	2,977	2,988	5,133	648	5,549	3,405	2,257	1,763
Comparative totals:									
1926	4,094	3,275	3,183	5,181	762	5,783	3,514	2,036	2,186
1925	3,529	2,754	2,932	4,811	1,191	4,650	2,776	2,122	2,037
Per cent distribution:									
1927	12.8	10.5	10.5	18.1	2.3	19.6	12.0	8.0	6.2
1926	13.6	10.9	10.6	17.3	2.5	19.3	11.7	6.8	7.3
1925	13.2	10.3	10.9	17.9	4.4	17.3	10.4	7.9	7.6

[1] Less than 500 tons.

Source: Iron Trade Review.

Table 7.—Distribution of Output of Finished Steel by Consuming Groups

NOTE.—The absolute figures for the three years are not strictly comparable, since they are based on the reports of companies controlling 76.30 per cent in 1924, 83.76 per cent in 1925, 93.32 per cent in 1926, and 94.89 per cent in 1927 of the country's capacity for steel ingots. The percentages are fairly comparable.

Consuming group	Thousands of tons				Per cent of total			
	1924	1925	1926	1927	1924	1925	1926	1927
All groups	**20,496**	**26,803**	**30,014**	**28,345**	**100.0**	**100.0**	**100.0**	**100.0**
Railroad buildings and bridges	664	525	875	471	3.2	2.0	2.9	1.7
Highway work and other bridges	(1)	(1)	(1)	292	(1)	(1)	(1)	1.0
Other buildings	2,956	4,106	3,933	4,213	14.4	15.3	13.1	14.9
Railroad track work	2,257	2,999	3,519	3,271	11.0	11.2	11.7	11.5
Street railways	176	177	174	140	.9	.7	.6	.5
Automotive vehicles	2,266	3,906	4,528	3,769	11.1	14.6	15.1	13.3
Railraod cars and locomotives	2,552	2,285	2,279	1,876	12.5	8.5	7.6	6.6
Oil, gas, and water requirements	1,697	2,161	2,787	2,508	8.3	8.1	9.3	8.8
Mining and lumbering	196	202	260	276	1.0	.8	.9	1.0
Agricultural equipment	724	810	807	1,219	3.5	3.0	2.7	4.3
Metal containers	993	1,130	1,573	1,476	4.8	4.2	5.2	5.2
Shipbuilding	171	164	196	234	.8	.6	.6	.8
Machinery and hand tools	756	722	796	787	3.7	2.7	2.6	2.8
Exports	1,259	1,204	1,587	1,520	6.1	4.5	5.3	5.4
Jobbers and warehouses	(2)	(2)	3,280	3,603			10.9	12.7
All other requirements	3,829	6,411	3,420	2,689	18.7	23.9	11.4	9.5

[1] Not shown separately. [2] Included in "All other requirements."

Source: Iron Trade Review.

Table 8.—Production of Pig Iron (Including Ferro-Alloys), Steel Ingots and Castings, and Finished Rolled Products

[Thousands of long tons]

Yearly average or year	Pig iron	Steel ingots and castings	Rolled products	Year	Pig iron	Steel ingots and castings	Rolled products
1871–1875	2,248	204		1915	29,916	32,151	24,393
1876–1880	2,563	804		1916	39,435	42,774	32,380
1881–1885	4,301	1,652		1917	38,621	45,061	33,068
1886–1890	7,079	3,293	5,089	1918	39,055	44,462	31,156
1891–1895	8,133	4,676	5,473	1919	31,015	34,671	25,102
1896–1900	11,492	8,440	8,163	1920	36,926	42,133	32,348
1901–1905	18,240	15,368	13,671	1921	16,688	19,784	14,774
1906–1910	24,025	22,167	18,509	1922	27,220	35,603	26,452
1911–1915	27,518	28,378	22,250	1923	40,361	44,944	33,277
1916–1920	37,010	41,820	30,811	1924	31,406	37,932	28,086
1921–1925	30,475	36,753	27,195	1925	36,701	45,394	33,387
1910	27,304	26,095	21,621	1926	39,373	48,294	35,496
1911	23,650	23,676	19,039	1927	36,566	44,935	32,879
1912	29,727	31,251	24,657	Per cent change from 1926	−7.1	−7.0	−7.4
1913	30,966	31,301	24,791				
1914	23,332	23,513	18,370				

Source: American Iron and Steel Institute. Figures differ somewhat from those in Table 4 which are from another source and are compiled on a slightly different basis.

Comparative Statistics for Earlier Years.

Comparative statistics of the production of pig iron, crude steel, and rolled steel products over an extended period of years are shown in Tables 8, 9, 10, and 11. These various tables combine to illustrate the steady growth of the American iron and steel industry over the

years prior to the war, the great and rapid expansion during the war period, and the high level of activity maintained over the postwar period except for the marked decrease in 1921.

Table 9.—Production of Pig Iron and Ferro-Alloys, by Processes

[Thousands of long tons]

Kind	1910	1915	1920	1921	1922	1923	1924	1925	1926	1927
All pig iron	**27,304**	**29,916**	**36,926**	**16,688**	**27,220**	**40,361**	**31,406**	**36,701**	**39,373**	**36,556**
Basic	9,085	13,093	16,738	7,753	13,841	19,796	15,999	19,667	21,168	19,357
Bessemer and low phosphorous	11,246	10,523	12,062	5,595	7,813	11,678	8,172	9,419	10,042	9,106
Foundry	5,145	4,712	5,723	2,457	3,842	6,249	5,423	5,184	5,507	5,504
Malleable	843	830	1,311	457	1,051	1,571	973	1,554	1,682	1,700
Forge	564	316	318	113	214	327	256	241	216	145
Other, and alloys	421	442	773	313	459	740	583	636	758	754

Source: American Iron and Steel Institute.

Table 10.—Production of Steel Ingots and Castings, by Processes

[Thousands of long tons]

Year	Grand total	Bessemer	Open hearth				Crucible	Electric	Miscellaneous
			Total	Per cent of grand total	Basic	Acid			
1890	4,277	3,689	513	12.0			71		4
1900	10,188	6,685	3,398	33.4	2,545	853	101		5
1905	20,024	10,941	8,971	44.8	7,816	1,156	102		9
1910	26,095	9,413	16,505	63.2	15,292	1,212	122	52	3
1915	32,151	8,287	23,679	73.6	22,309	1,370	114	69	2
1920	42,133	8,883	32,672	77.5	31,376	1,296	72	502	4
1921	19,784	4,016	15,590	78.8	15,083	507	8	169	1
1922	35,603	5,919	29,309	82.3	28,387	922	29	346	
1923	44,944	8,484	35,900	79.9	34,665	1,235	44	516	
1924	37,932	5,900	31,577	83.2	30,720	858	22	433	
1925	45,394	6,724	38,034	83.8	37,087	947	20	616	
1926	48,294	6,935	40,692	84.3	39,653	1,039	15	652	
1927	44,935	6,192	38,068	84.7	37,144	924	9	666	

Source: American Iron and Steel Institute.

The percentage distribution of the more important classes of rolled steel is shown in Table 12. From this table it will be noted that production of the various classes of products shown varies but little from year to year in relative importance, although all changed slightly in 1927 compared with 1926. Sheets and plates have been of first importance, and since 1922 constituted about 29 or 30 per cent of the total; merchant and concrete bars have ranked second, ranging from 17 to about 20 per cent; structural shapes and skelp each usually amount to more than 10 per cent; wire rods and rails about 8 or 9 per cent; and other products make up the balance.

Table 11.—Production of Rolled and Miscellaneous Iron and Steel Products

[Thousands of long tons, unless otherwise indicated]

Item	1910	1915	1920	1922	1923	1924	1925	1926	1927
Rolled products	**21,621**	**24,393**	**32,348**	**26,452**	**33,277**	**28,086**	**33,387**	**35,496**	**32,879**
Rails, iron and steel	3,636	2,204	2,604	2,172	2,905	2,433	2,785	3,218	2,806
Sheets and plates, total	4,955	6,078	9,338	7,968	9,498	8,088	9,808	10,529	9,628
Universal	.....	955	1,250	1,248	1,304	1,002	1,196	1,408	1,245
Sheared	.....	1,923	3,505	2,172	2,865	2,147	2,557	2,794	2,476
Black sheets [1]	.....	1,837	2,886	2,917	3,503	3,266	4,097	4,237	3,979
Black plates for tinning	.....	1,093	1,449	1,267	1,499	1,415	1,632	} 2,090	1,928
Other black-plate specialties	.....	270	247	365	327	257	325		
Wire rods	2,242	3,096	3,137	2,655	3,076	2,523	2,845	2,722	2,770
Structural shapes	[2] 2,267	2,437	3,307	2,719	3,405	3,284	3,604	3,912	3,742
Merchant bars	3,786	4,131	6,130	3,979	5,553	4,281	5,659	5,474	4,870
Concrete bars	241	353	572	576	681	656	820	816	816
Skelp, flue, and pipe iron or steel	1,828	2,299	3,220	2,872	3,734	3,171	3,230	3,765	3,419
Hoops	262	282	333	222	221	179	205	190	176
Bands and cotton ties	425	438	389	271	348	294	356	356	323
Splice and tie-plate bars	.....	536	576	606	750	630	823	954	865
Rolled forging blooms, billets, etc	460	651	447	326	449	347	345	363	286
Blooms, slabs, billets, and sheet bars, for export	.....	562	136	11	1	([3])	([3])	([3])	1
All other	1,519	1,326	2,158	2,075	2,657	2,200	2,908	3,197	3,462
Miscellaneous products:									
Tin and terne plates	723	1,056	1,446	1,288	1,507	1,419	1,658	1,782	1,674
Galvanized sheets	.....	[4] 1,582	[4] 1,871	[4] 2,110	[4] 2,365	[4] 2,229	[4] 2,539	[4] 2,788	[4] 2,768
Galvanized formed products	.....	[4] 112	[4] 144	[4] 166	[4] 166	[4] 156	[4] 178	[4] 155	[4] 169
Rail joints and fastenings	.....	471	527	538	676	570	733	867	806
Wire nails	[5] 12,705	[5] 14,583	[5] 16,450	[5] 15,053	[5] 17,673	[5] 15,101	[5] 15,454	[5] 14,869	[5] 14,389
Cut nails	[5] 1,005	[5] 775	[5] 845	[5] 810	[5] 830	[5] 742	[5] 736	[5] 662	[5] 703
Wrought pipe [6]	.....	1,920	3,003	2,732	3,351	2,824	3,031	3,403	3,117
Boiler tubes	.....	97	119	74	91	56	63	61	47
Seamless steel tubes	.....	140	292	258	404	261	[7] 568	[7] 775	[7] 864
Cast-iron pipe	.....	[8] 1,215	[8] 887	[8] 1,283	[8] 1,567	[8] 1,841	[8] 2,324	[8] 2,004	[8] 2,043

[1] Rolled in sheet or jobbing mills.
[2] Production of small structural forms not included.
[3] Less than 500 tons.
[4] Millions of pounds.
[5] Thousands of 100-lb. kegs.
[6] Including boiler tubes.
[7] Includes 162,294 tons of seamless steel boiler tubes in 1925, 174,000 in 1926, and 157,205 in 1927. Figures for prior years not available.
[8] Thousands of short tons.

Source: American Iron and Steel Institute.

Table 12.—Percentage Distribution of Production of Rolled Iron and Steel

[Percentages based on Table 11]

Item	1910	1915	1920	1922	1923	1924	1925	1926	1927
Total rolled products	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Rails, iron and steel	16.8	9.0	8.1	8.2	8.7	8.7	8.3	9.1	8.5
Sheets and plates, total	22.9	24.9	28.9	30.1	28.5	28.8	29.4	29.7	29.3
Wire rods	10.4	12.7	9.7	10.0	9.2	9.0	8.5	7.6	8.3
Structural shapes	10.5	10.0	10.2	10.3	10.2	11.7	10.8	11.0	11.4
Merchant and concrete bars	18.6	18.4	20.7	17.2	18.7	17.6	19.4	17.7	17.3
Skelp, flue, and pipe iron or steel	8.5	9.4	10.0	10.9	11.2	11.3	9.7	10.6	10.4
All other	12.3	15.6	12.4	13.3	13.5	12.9	13.9	14.3	14.8

MARKET CONDITIONS AND PRICE MOVEMENT

The practice of hand-to-mouth buying has been increasing since the war, and this has tended to minimize the services of jobbers and distributing warehouses. This change in buying practice is to be attributed in no little degree to the improvement in the efficiency

of the transportation service rendered by the railroads, the rapid development of inland waterways, and to services of carriers auxiliary to both of these, as well as to the presence of a generous mill capacity combined with improved productive methods—factors which make it no longer necessary for the consumer of steel to lay in large stocks and which enable him to secure his requirements upon short notice direct from the mills rather than from jobbers and private distributing warehouses. Curiously enough, this trend toward direct buying was temporarily halted in 1927, according to the statistics of distribution of finished steel (Table 7), which indicate that in 1926, 10.9 per cent of the finished steel sold went to jobbers and private warehouses (in distinction from the warehouses maintained by the larger producers at commercially strategic points) and that in 1927 this proportion increased to 12.7 per cent.

The transition from warehouse merchandising of steel products to direct purchase of these products has been aided by the steady development of the national system of inland waterways and by the expanded and improved facilities linking this system with rail and motor-truck terminals. Water transportation, while lacking the speed of rail and motor carriage, facilitates the movement of the heavier iron and steel products and combines ease of actual transit with lower costs per mile.

Another of the outstanding characteristics of 1927 was the tendency toward consolidations within the steel industry. The new combinations operate in many fields, but are engaged principally in the production of sheets and strips. The year was also marked by greater activity among those groups which are striving to increase the uses of steel and its products.

Factors Affecting Demand.

The production of merchant pig iron, which is made for sale as such and is not transformed into steel by the maker, reflects approximately the demand for pig iron in industries other than those engaged in making and rolling steel as well as the activity of the concerns directly engaged in its manufacture. Of this merchant pig iron (representing 23 per cent of the total output of all pig iron) the greater part is of foundry grade. Maximum production occurred in March, although the monthly output was well maintained through July.

Per cent of capacity in the production of steel sheets and unfilled orders of the United States Steel Corporation are barometers which reflect the trend in the demand for intermediate products and for steel in general. (Table 13.) Both of these indicate a relatively weaker demand over the whole of 1927 than was the case in 1926, but both, especially the unfilled orders, improved toward the close of the year.

Table 13.—Production of Merchant Pig Iron and Steel Sheets, and Unfilled Orders for Iron and Steel

[Thousands of long tons]

Period	Production of merchant pig iron			Production of steel sheets, per cent of stated capacity			United States Steel Corporation, unfilled orders [1]		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Total	7,592	8,684	8,359	[2] 92.8	[2] 90.4	[2] 85.3			
January	659	725	746	98.0	104.4	83.5	5,037	4,883	3,800
February	661	622	643	96.5	100.9	97.4	5,285	4,617	3,597
March	736	733	762	90.7	94.2	108.8	4,864	4,380	3,553
April	689	779	735	87.5	91.0	103.1	4,447	3,868	3,456
May	605	798	702	87.0	84.3	98.7	4,050	3,649	3,051
June	564	735	714	83.4	84.0	95.9	3,710	3,479	3,053
July	610	758	737	75.5	77.3	80.2	3,539	3,603	3,142
August	588	682	667	87.2	92.0	80.3	3,513	3,542	3,196
September	569	684	651	92.7	96.2	62.6	3,717	3,594	3,148
October	606	713	689	106.4	101.4	71.7	4,109	3,684	3,347
November	638	710	652	107.8	86.9	65.9	4,582	3,807	3,455
December	665	744	661	100.7	72.3	75.9	5,033	3,961	3,973

[1] End of month. [2] Average for year.

Sources: Iron Trade Review, National Association of Sheet and Tin Plate Manufacturers, and United States Steel Corporation.

Composite Prices.

As may be noted from Table 14, the prices of pig iron, because so little is produced for sale, vary much more widely than do those for finished steel. The 1927 composite index price of pig iron averaged 8.8 per cent less than in 1926 and was lower at the end of the year than at any time since the war. The average composite index price for steel was 3.4 per cent lower than in 1926, although in this class of products the decline was more gradual and the net decrease during the year was smaller than in the case of pig iron.

Table 14.—Index Numbers of Composite Prices for Finished Steel and Pig Iron

[Average for 1913=100]

Month	Finished steel (composite)								Pig iron (composite)							
	1920	1921	1922	1923	1924	1925	1926	1927	1920	1921	1922	1923	1924	1925	1926	1927
Average	222	152	134	165	157	148	147	142	284	156	162	176	142	138	137	125
January	190	184	124	149	168	154	147	146	258	212	132	177	150	151	145	131
February	210	176	121	157	167	153	146	143	277	194	125	181	156	151	145	128
March	225	166	122	164	166	153	146	142	279	177	125	197	155	148	144	128
April	231	165	125	169	162	151	147	142	283	167	135	204	152	141	140	130
May	230	166	127	168	159	148	145	142	288	159	155	200	146	134	137	129
June	227	159	130	168	157	147	146	142	291	150	158	189	137	128	134	128
July	234	148	131	167	154	146	146	142	296	140	159	175	130	128	131	125
August	239	141	138	167	152	145	146	142	307	132	180	169	131	128	131	123
September	239	136	146	167	150	144	147	142	318	136	211	168	132	130	131	123
October	230	134	148	167	148	145	147	139	305	137	206	158	132	134	132	122
November	215	128	148	167	150	146	148	138	271	136	191	146	134	142	135	119
December	187	127	147	167	153	147	148	139	235	132	173	148	145	144	135	119

Sources: The Iron Age and Bureau of the Census, Department of Commerce, from compilations by the American Metal Market.

Prices Individual Products.

The prices of the several grades of pig iron have moved in rather close parallel since 1920 and decreased throughout 1927. (Table 15.) The prices of most steel products remained unchanged or declined; however, variations from month to month and for the year were,

in the case of several products, quite marked. (Table 16.) During the year the price of tin plate for the first time since 1924 fell below $5.50 per box; it averaged $5.48 for the year and was quoted at $5.25 in December, while steel pipe followed a similar course, averaging $70 per short ton as against $70.30, the price which it had held since 1924. A low price for steel pipe of $68.79 was reached in November and December. The price of wrought pipe, $127.82 per net ton, has remained stationary since March, 1925.

Table 15.—Average Prices of Pig Iron per Long Ton at Pittsburgh

Year	Bessemer	Basic	Foundry No. 2	Malleable	Gray forge
1913	$17.16	$15.68	$14.94	$15.00	$15.32
1920	44.53	44.19	44.82	42.90	43.67
1921	25.49	23.74	25.19	23.30	24.15
1922	27.03	26.13	27.02	25.26	26.53
1923	28.96	27.66	28.02	27.82	27.42
1924	23.23	22.06	22.38	22.39	22.06
1925	22.28	21.52	21.63	21.68	21.17
1926	21.35	20.30	20.78	20.79	20.36
1927	20.43	17.75	19.66	19.68	19.17

Source: Based on figures from the Iron Trade Review.

Table 16.—Average Prices of Iron and Steel Products at Pittsburgh

Period	Bessemer billets[1] (long ton)	Open-hearth sheet bars[1] (long ton)	Wire rods (long ton)	Tin plate (box 100 lbs.)	Black sheets (100 lbs.)	Soft steel bars (100 lbs.)	Tank plates (100 lbs.)	Structural shapes (100 lbs.)	Wrought-iron pipe (short ton)	Steel pipe (short ton)	Cast-iron pipe[2] (short ton)
1913	$25.79	$26.85	$28.40	$3.55	$2.20	$1.55	$1.50	$1.50	$50.65	$36.42	$23.37
1920	56.22	67.09	69.55	7.53	5.83	3.22	3.28	2.95	119.16	83.13	73.98
1921	34.46	35.99	45.94	5.90	3.50	1.87	1.93	1.94	116.55	66.14	54.68
1922	33.95	34.55	40.49	4.73	3.19	1.72	1.72	1.71	107.50	54.69	51.44
1923	41.70	42.53	50.39	5.42	3.73	2.36	2.43	2.43	129.67	68.71	60.57
1924	37.99	39.68	48.31	5.50	3.60	2.20	2.12	2.19	131.10	70.30	59.46
1925	35.23	36.38	46.05	5.50	3.28	2.02	1.91	1.99	128.37	70.30	51.65
1926	35.00	36.04	45.00	5.50	3.21	2.00	1.88	1.95	127.82	70.30	50.25
1927	33.27	34.08	42.44	5.48	3.13	1.84	1.82	1.83	127.82	70.00	42.61
1925											
January–March	36.90	38.83	48.00	5.50	3.51	2.10	2.00	2.10	130.01	70.30	54.07
April–June	35.25	36.08	46.20	5.50	3.23	2.02	1.97	2.02	127.82	70.30	51.35
July–September	35.00	35.00	45.00	5.50	3.14	1.96	1.85	1.95	127.82	70.30	50.60
October–December	34.67	35.60	45.00	5.50	3.23	2.00	1.85	1.90	127.82	70.30	50.60
1926											
January–March	35.00	36.17	45.00	5.50	3.29	2.00	1.84	1.90	127.82	70.30	50.60
April–June	35.00	36.00	45.00	5.50	3.18	1.98	1.88	1.91	127.82	70.30	50.60
July–September	35.00	36.00	45.00	5.50	3.12	2.00	1.90	2.00	127.82	70.30	50.35
October–December	35.00	36.00	45.00	5.50	3.24	2.00	1.90	2.00	127.82	70.30	49.43
1927											
January	35.00	36.00	45.00	5.50	3.16	1.98	1.90	1.98	127.82	70.30	48.60
February	33.00	35.00	43.00	5.50	3.05	1.90	1.86	1.90	127.82	70.30	48.60
March	34.00	34.00	43.00	5.50	3.00	1.90	1.85	1.90	127.82	70.30	47.20
April	33.25	33.75	42.25	5.50	2.99	1.89	1.85	1.88	127.82	70.30	47.35
May	33.00	33.75	42.00	5.50	3.11	1.85	1.84	1.80	127.82	70.30	45.80
June	33.00	33.50	42.00	5.50	3.25	1.81	1.80	1.80	127.82	70.30	44.42
July	33.00	33.50	42.25	5.50	3.25	1.80	1.80	1.80	127.82	70.30	42.75
August	33.00	33.50	43.00	5.50	3.25	1.80	1.80	1.80	127.82	70.30	39.65
September	33.00	33.90	43.00	5.50	3.25	1.78	1.78	1.78	127.82	70.30	37.25
October	33.00	34.00	42.75	5.50	3.15	1.75	1.75	1.75	127.82	69.54	36.50
November	33.00	34.00	41.00	5.50	3.03	1.77	1.77	1.77	127.82	68.79	36.25
December	33.00	34.00	40.00	5.25	3.03	1.80	1.80	1.80	127.82	68.79	37.00

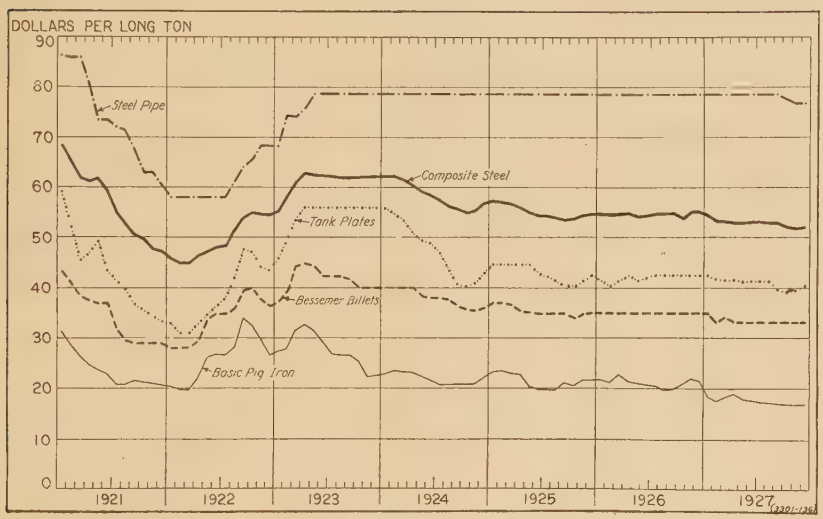
[1] Except for a few months in 1920 and 1925, quotations on open-hearth billets and Bessemer sheet bars throughout 1920 to 1927, inclusive, were the same as those on Bessemer billets and open-hearth sheet bars, respectively.

[2] At New York.

Sources: Iron Age, with the exception of open-hearth sheet bars, quotations for which are from Iron Trade Review.

Statistics of the longer swing of prices (Chart III and Table 17) show for most products, notably pig iron, a number of marked changes. Steel being largely used for construction work and production of machinery, is greatly affected by changes in the general level of

Chart III.—PRICES AT PITTSBURGH OF COMPOSITE STEEL AND SELECTED INDIVIDUAL PRODUCTS



business activity. However, there has been some attempt to hold the prices of this product at a moderate level even when demand is strong. With the exception of the price of open-hearth rails, which has remained the same for five years, all prices declined in 1927.

Table 17.—Prices of Selected Iron and Steel Products

NOTE.—Prices of pig iron are at Valley furnaces; of rails, at mills in Pennsylvania; of other products, at Pittsburgh. Prices per long ton for pig iron, rails, and billets and per 100 pounds for other products.

Year	Pig iron (basic) [1]	Open-hearth rails	Bessemer billets	Soft-steel bars	Tank plates	Structural shapes	Year	Pig iron (basic)	Open-hearth rails	Bessemer billets	Soft-steel bars	Tank plates	Structural shapes
1890	$18.87	$31.78	$30.29	------	------	------	1913	$14.71	$30.00	$25.79	$1.55	$1.50	$1.50
1895	12.72	24.33	18.48	------	------	------	1914	12.87	30.00	20.08	1.15	1.14	1.15
1900	19.49	32.29	25.06	$1.59	$1.54	$1.91	1915	13.74	30.00	22.44	1.31	1.31	1.31
1901	15.93	27.33	24.13	1.42	1.55	1.58	1916	19.76	34.00	43.95	2.67	3.53	2.55
1902	20.67	28.00	30.57	1.58	1.70	1.81	1917	38.90	40.00	70.78	3.63	5.88	3.67
1903	18.98	28.00	27.91	1.56	1.61	1.62	1918	32.50	57.00	47.33	2.89	3.24	2.99
1904	12.59	28.00	22.18	1.33	1.54	1.54	1919	27.65	49.29	40.51	2.50	2.72	2.53
1905	15.25	28.00	24.03	1.48	1.58	1.62	1920	42.21	54.38	56.22	3.22	3.28	2.95
1906	18.10	28.00	27.41	1.51	1.61	1.70	1921	21.74	45.69	34.46	1.87	1.93	1.94
1907	20.87	28.00	29.23	1.60	1.70	1.70	1922	24.20	40.75	33.95	1.72	1.72	1.71
1908	15.16	28.00	26.31	1.49	1.64	1.64	1923	25.81	43.00	41.70	2.36	2.43	2.43
1909	15.48	28.00	24.61	1.33	1.42	1.42	1924	20.24	43.00	37.99	2.20	2.12	2.19
1910	14.76	28.00	25.40	1.44	1.47	1.45	1925	19.59	43.00	35.23	2.02	1.91	1.99
1911	13.07	28.00	21.43	1.26	1.31	1.32	1926	18.55	43.00	35.00	2.00	1.88	1.95
1912	13.92	30.00	22.39	1.29	1.33	1.32	1927	17.70	43.00	33.27	1.84	1.82	1.83

[1] Down to 1904 figures represent Bessemer pig iron, Pittsburgh; from 1904 on they represent basic in the Valleys and are less than basic prices in Table 15, which are at Pittsburgh. In 1904 the price of Bessemer pig iron was $13.76 and the price of basic, the Valleys, was $12.59.

Sources: Compiled by American Iron and Steel Institute from the Iron Age and other sources.

FOREIGN TRADE

Exports.

Although the production of iron and steel in the United States aggregates about one-half that of the entire world, it exports a little less than 5 per cent of this quantity and ranks fifth among the countries of the world in volume of exports. The total exports from the United States of iron and steel products (not including exports of such advanced manufactures as automotive products, machinery, etc.), amounted to 2,183,000 gross tons, as compared with 2,167,000 tons in 1926, and was larger than in any year since 1921. (Table 18.) Exports in 1927 were valued at $160,160,000.

More iron and steel was exported during January than in any other month of the year, while the lowest monthly exports were in September. Shipments declined sharply in February after the large exports in January, but continued to improve thereafter until May, when they reached the second highest total of the year. (Table 19.) There was no distinct trend manifest during the rest of the year and the month-to-month figures varied more or less widely.

Table 18.—Aggregate Domestic Exports of Heavy Iron and Steel [1]

NOTE.—Prior to 1922, the small items for which quantity is not available are included, while in later years these items are included. Ferromanganese is included for all years.

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	1,000 long tons	*Thousands of dollars*		*1,000 long tons*	*Thousands of dollars*		*1,000 long tons*	*Thousands of dollars*
1890	52	----------	1909	1,244	50,777	1920	4,935	458,376
1895	89	----------	1910	1,538	63,436	1921	2,213	214,830
1900	1,154	42,518	1911	2,188	86,599	1922	1,995	136,334
1901	701	29,050	1912	2,948	112,535	1923	2,010	167,247
1902	372	15,889	1913	2,746	108,875	1924	1,806	150,494
1903	327	14,533	1914	1,550	63,409	1925	1,763	144,262
1904	1,168	35,248	1915	3,533	140,993	1926	2,167	174,146
1905	1,010	33,813	1916	6,101	353,971	1927	2,183	160,160
1906	1,326	52,215	1917	6,439	567,041	Per cent change from 1926	+0.7	−8.0
1907	1,302	60,046	1918	5,375	558,279			
1908	964	43,397	1919	4,400	410,164			

[1] Beginning with 1922 the small item "steam and hot water heating boilers and radiators" is omitted being covered by Table 22.

Source: Bureau of Foreign and Domestic Commerce.

Table 19.—Aggregate Domestic Exports of Heavy Iron and Steel, by Months

Month	Quantity, long tons				Month	Quantity, long tons			
	1924	1925	1926	1927		1924	1925	1926	1927
January	248,597	141,708	174,585	215,283	July	129,555	139,858	194,754	190,532
February	165,918	102,298	157,202	166,300	August	136,022	188,467	171,632	175,752
March	129,220	155,383	169,440	171,868	September	135,895	136,791	182,071	166,153
April	127,136	155,423	194,451	192,369	October	158,553	141,816	172,069	170,866
May	155,238	150,617	173,421	202,960	November	125,621	171,135	219,876	177,942
June	165,047	136,849	159,521	184,647	December	129,464	142,206	198,191	168,419

Source: Bureau of Foreign and Domestic Commerce.

Of the individual heavy iron and steel products exported during 1927 tin plate and terneplate made up the greatest single item in point of weight, followed in order by boiler tubes and welded pipe, scrap, steel rails, black steel sheets, and galvanized sheets. In value, however, this order varied slightly, tin plate and terneplate and boiler tubes holding first and second places, respectively, followed in order by galvanized sheets, black steel sheets, steel bars, steel rails, iron and steel plates, and structural shapes. (Table 20.) Total shipments of heavy iron and steel products in 1927 increased slightly, but only 13 of the 35 classes of products showed a tonnage gain. Scrap, with a gain of 134,000 tons, had the largest increase, while shipments of pig iron showed the next largest gain, 26,000 tons. Exports of boiler tubes, steel bars, and galvanized sheets decreased about 27,000 tons each, black steel sheets decreased 23,000 tons, and rails decreased 10,000 tons.

Table 20.—Exports of Heavy Iron and Steel Products, by Classes

Article	Quantity (long tons)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Total	1,806,266	1,762,551	2,167,213	2,183,091	150,494	144,262	174,146	160,160
Pig iron, not including ferroalloys	41,483	32,674	25,208	50,992	958	725	524	1,028
Ferromanganese and spiegeleisen	[1] 3,940	5,496	693	1,641	[1] 121	161	44	62
Scrap	97,748	82,573	104,838	239,159	1,531	1,377	1,794	3,765
Ingots, blooms, billets, sheet bars, and skelp	96,155	87,479	100,956	98,613	4,661	3,892	4,555	4,344
Iron bars	5,054	4,616	5,171	3,872	514	425	445	345
Steel bars	99,534	111,950	137,770	111,126	7,190	7,605	8,935	6,938
Alloy steel bars	2,742	3,692	4,946	6,149	615	703	923	917
Wire rods	18,762	21,207	19,646	16,128	1,048	1,082	1,086	883
Galvanized sheets	108,152	160,269	178,636	152,181	11,940	16,842	18,392	15,497
Plates, iron and steel	85,048	104,448	138,258	139,632	5,248	6,205	7,602	6,574
Black steel sheets	148,742	95,443	175,740	152,525	13,302	8,211	14,195	12,188
Black iron sheets	11,005	14,771	19,252	17,147	1,239	1,473	2,024	1,663
Hoop, band, and strip steel	34,141	40,938	46,912	43,159	2,943	3,124	3,453	3,061
Tin plate, terneplate, etc	160,997	161,385	250,782	253,890	19,430	18,587	28,766	29,062
Structural shapes, plain material	102,408	104,339	157,121	148,176	5,990	5,470	7,655	6,554
Structural materials, fabricated	70,786	73,463	77,853	69,423	6,978	5,793	6,952	5,912
Metal lath	2,309	3,442	4,376	4,666	419	577	729	779
Steel rails	208,496	151,690	187,557	177,586	7,951	6,155	7,643	6,783
Rail fastenings, switches, frogs, etc	36,113	35,367	41,771	34,372	3,486	3,250	3,344	3,155
Bolier tubes and welded pipe	200,951	229,792	275,454	248,473	20,969	22,818	26,522	23,299
Cast-iron pipes and fittings	28,771	32,206	34,112	27,975	4,477	3,901	4,094	3,436
Malleable-iron screwed pipe fittings	11,024	9,886	12,368	10,061	2,856	2,825	3,434	3,086
Barbed-wire and woven-wire fencing	90,444	71,117	50,718	52,393	6,970	5,234	3,719	3,762
Plain wire	37,047	35,598	31,311	35,435	3,362	3,190	2,710	2,844
Wire cloth and screening	1,631	1,854	1,989	2,255	695	744	746	827
Wire rope	4,187	4,376	4,779	4,547	1,220	1,258	1,446	1,342
Insulated wire and cable	978	642	738	491	398	268	276	191
Wire, other, and manufactures thereof	11,225	8,376	8,982	9,558	2,156	1,991	1,983	1,894
Wire nails	21,665	9,838	11,743	9,990	1,934	834	885	763
Nails other than wire, including tacks	7,886	9,237	7,924	8,429	1,605	1,776	1,635	1,655
Horseshoes	963	708	661	563	122	116	102	91
Bolts, nuts, rivets, and washers, except track	17,495	16,962	13,220	12,228	2,931	2,819	2,409	2,196
Car wheels and axles	22,329	19,935	16,679	16,661	1,946	1,734	1,487	1,273
Iron castings	8,460	10,412	8,838	11,724	1,447	1,421	1,276	1,353
Steel castings	5,879	4,210	7,566	7,003	1,409	1,122	1,829	1,808
Forgings	1,714	2,171	2,645	4,868	428	556	533	827

[1] Includes ferrosilicon.

Source: Bureau of Foreign and Domestic Commerce.

Exports by Countries of Destination.

Of the heavy iron and steel exports of the United States in 1927, 50 per cent went to countries in North and Central America and the West Indies, 16 per cent to South America, 9 per cent to Europe, 24 per cent to the Far East, and 1 per cent to Africa. (Table 21.) Canada was the largest single buyer, taking 38 per cent of all shipments, while Japan, the second largest purchaser, took 13 per cent. Exports to Japan were 7 per cent larger than in 1926. Argentina took 4 per cent of our heavy iron and steel; exports to that country in 1927 were 37 per cent larger than in 1926 and amounted to 82,380 long tons. Exports to Cuba and Mexico also each accounted for about 4 per cent of the total, while the United Kingdom, Brazil, and Colombia each took 3 per cent and China 2½ per cent of the total. Of the grand divisions, Europe, the Far East, and Africa, increased their purchases, while shipments to North America and South America declined.

Table 21.—Exports of Heavy Iron and Steel, by Countries of Destination

[In long tons. For totals see Table 18]

Country	1926	1927	Country	1926	1927
North and Central America and the West Indies	1,107,964	1,089,729	**Europe—Continued.**		
Canada, Newfoundland, and other northern North America	834,858	834,025	Rumania	2,591	2,457
Cuba	94,708	92,486	Russia	3,073	8,099
Mexico	100,837	81,747	Turkey	3,032	3,711
Guatemala	10,125	6,124	United Kingdom	68,809	66,915
Salvador	16,277	7,139	Other countries	32,770	69,708
Panama	9,015	18,880	**Far East**	523,833	526,709
British West Indies	10,580	12,384	Australia	33,353	26,670
Other West Indies	17,272	23,726	British Malaya	15,520	8,444
Other Central America	14,292	13,218	China	46,054	53,843
South America	373,102	349,443	Netherland East Indies	41,028	35,258
Argentina	60,105	82,380	India	37,097	28,326
Brazil	62,542	70,633	Japan	260,361	278,206
Chile	61,642	44,641	Kwangtung	20,247	19,293
Colombia	71,142	59,080	Philippine Islands	57,554	63,343
Peru	37,819	32,207	Other Asia and Far Eastern markets	12,619	13,326
Venezuela	68,116	45,667	**Africa**	18,160	19,901
Other countries	11,736	14,835	British South Africa	9,393	10,403
Europe	144,154	197,309	Egypt	5,761	4,556
France	10,393	4,586	Mozambique	2,299	3,827
Italy	23,486	41,833	Other Africa	707	1,115

Source: Bureau of Foreign and Domestic Commerce.

Exports of Miscellaneous Advanced Iron and Steel Manufactures.

The value of exports of advanced iron and steel manufactures, not including machinery and vehicles, declined 2.2 per cent as compared with 1926. (Table 22.) Comparisons of these products on a basis of weight or other nonmonetary unit are impracticable on account of the wide variety of products included within a class, and for this reason data are shown only for values. The principal class, forming 30 per cent of the total exported, consists of products

grouped under the title "Tools," which includes all of the common tools intended for hand usage. Exports of tools in 1927 were valued at $19,084,000, which was 1.6 per cent less than in 1926. Exports of cutlery, the next largest item, increased 9 per cent and amounted to $10,233,000. Household-utensil exports declined 14 per cent while exports of stoves, furnaces, and parts declined 16 per cent. There were declines also in shipments of lamps and illuminating devices (except electric) and of chains amounting to 22 per cent, and 9 per cent, respectively. Exports of plumbing in 1927 increased 13 per cent as compared with 1926, scales and balances increased 10 per cent, and shipments of safes and vaults increased 52 per cent.

Table 22.—Exports of Miscellaneous Iron and Steel Products

Item	Value (thousands of dollars)			Item	Value (thousands of dollars)		
	1925	1926	1927		1925	1926	1927
Total	68,751	65,267	63,842	Household utensils	1,941	1,932	1,671
Hardware	9,593	9,640	8,584	Aluminum ware (table, kitchen, and hospital)	629	531	565
Locks	1,868	1,588	1,318	Enameled household ware	626	662	402
Other hardware of iron and steel [1]	7,034	7,237	6,503	Tin and galvanized iron hollow ware	685	740	704
Builders' hardware of brass and bronze	691	815	764	Stoves and furnaces and parts, except electric	3,775	4,925	4,132
Tools	20,261	19,398	19,084	Plumbing fixtures	2,009	2,495	2,830
Axes	1,341	1,055	1,034	Enameled iron and steel [2]	1,221	1,236	1,238
Files and rasps	2,912	2,674	2,804	Earthenware	789	1,027	1,199
Hammers and hatchets	419	363	370	Plumbers' brass goods		232	394
Wood-cutting saws	970	792	691	Chains	2,531	2,765	2,513
Metal-cutting and other saws	1,494	1,109	1,305	Sprocket and other power transmission	738	1,085	1,226
Shovels and spades	488	432	417	Other	1,792	1,681	1,287
Reamers, cutters, drills, taps, dies, and other metal-working tools	2,748	2,439	2,603	Lamps and illuminating devices, except electric	3,736	3,073	2,393
Other tools	9,891	10,535	9,859	Scales and balances	2,442	2,118	2,325
Cutlery	13,094	9,406	10,233	Needles, hand and machine	837	712	687
Safety razors	1,417	883	733	Tin cans, finished and unfinished	991	929	840
Safety-razor blades	8,572	5,930	7,021	Safes and vaults (including bank)	733	851	1,296
Table and kitchen cutlery	697	589	611	Abrasives	6,807	7,023	7,254
Other cutlery and parts	2,409	2,004	1,867				

[1] Advanced manufactures—hinges and bolts, furniture, saddlery and harness, car, marine, and similar hardware.
[2] Bathtubs, lavatories, sinks, etc.
Source: Bureau of Foreign and Domestic Commerce.

Imports of Iron and Steel.

Imports of iron and steel products into the United States in 1927 were only two-thirds as large as in 1926 and were less than those of 1925. Whereas for a long period the greater part of these imports had been chiefly crude products intended for further manufacture, during 1926, and especially 1927, there were distinct increases in the tonnage of finished products imported. The total value of imports of products for further manufacture fell off about one-third as compared with 1926, while steel-mill products increased over one-eighth.

Imports of structural shapes increased in quantity by about two-fifths in 1927, "Other pipe and tubes" by about one-half, and shipments of wire rods and barbed wire were also substantially larger. On the other hand, imports of pig iron, ferrosilicon, steel ingots, scrap, tin plate, and rails were very much smaller than in 1926.

Statistics of production and trade of leading foreign countries in iron and steel will appear in Volume II of the Commerce Yearbook.

Table 23.—Imports of Leading Iron and Steel Products, by Classes

Article	Quantity (long tons)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Total[1]	543,223	934,035	1,068,271	711,676	24,346	35,289	36,794	31,123
Iron and steel semimanufactures:								
Pig iron	209,109	441,425	445,773	132,568	3,741	7,951	7,709	2,254
Ferrosilicon	11,991	4,556	13,124	7,753	1,235	585	1,386	1,026
Ferromanganese and other alloys	47,811	68,077	43,932	34,023	4,055	6,578	4,138	3,405
Ferrochromium	423	674	526	435	104	143	124	54
Scrap	66,841	99,815	86,725	60,209	1,026	1,361	991	729
Steel bars		58,805	103,474	91,498		2,874	4,413	4,091
Bar iron	4,325	11,740	5,625	4,226	262	538	291	193
Wire rods	6,851	7,988	10,075	17,990	460	539	692	943
Boiler and other plate	3,276	818	4,945	4,035	126	50	144	126
Steel ingots, etc	39,024	27,081	30,825	13,672	3,074	1,769	1,324	706
Sheets, skelp, and saw plate	2,789	3,662	10,671	15,725	200	292	563	773
Tin plate, terneplate, etc	1,036	382	2,159	1,064	158	108	297	192
Steel mill products (manufactures):								
Structural shapes, building forms	43,245	77,291	121,100	161,848	1,904	2,863	3,923	5,532
Rails for railways	43,358	36,872	55,212	15,401	1,313	1,051	1,449	423
Cast-iron pipe	54,473	82,863	{83,874	81,764	2,782	4,726	{2,461	2,609
Other pipe and tubes			{31,075	50,148			{3,151	4,652
Barbed wire			3,055	4,027			185	242
Round wire	3,277	4,054	4,330	3,963	674	842	799	682
Flat wire and steel strips	2,088	2,190	3,678	2,543	2,788	2,458	2,076	1,709
Nails	452	2,759	5,355	5,665	48	203	348	394
Castings and forgings	2,854	2,983	2,738	3,053	396	358	330	388

[1] Articles listed only.

Source: Bureau of Foreign and Domestic Commerce.

COPPER

SUMMARY.—The total production of new copper by refineries in the United States during 1927 was 1,159,000 short tons, of which approximately 869,000 tons were derived from domestic ore. The total production was only slightly less than in 1926 and was larger than in any other year since the war.

Consumption of new copper, as indicated by the amounts withdrawn on domestic account, was 8 per cent less than in 1926. The apparent exportable surplus of new refined copper amounted to 438,000 short tons, an increase of more than 16 per cent over that of 1926.

Imports of copper decreased 8 per cent in quantity from the amount in 1926, but exceeded those of 1925. Exports of refined copper increased 9 per cent in 1927, but were smaller than in 1924 or 1925. In 1927 net exports almost doubled. Stocks of refined copper at the end of the year were 84,000 short tons, or 15 per cent more than at the end of 1926, when stocks were exceptionally low.

The average New York price of electrolytic copper in 1927 was 12.9 cents, as compared with 13.8 cents in 1926. Prices during 1927 were highest at the end of the year.

Chart IV.—PRICES OF COPPER, LEAD, AND ZINC

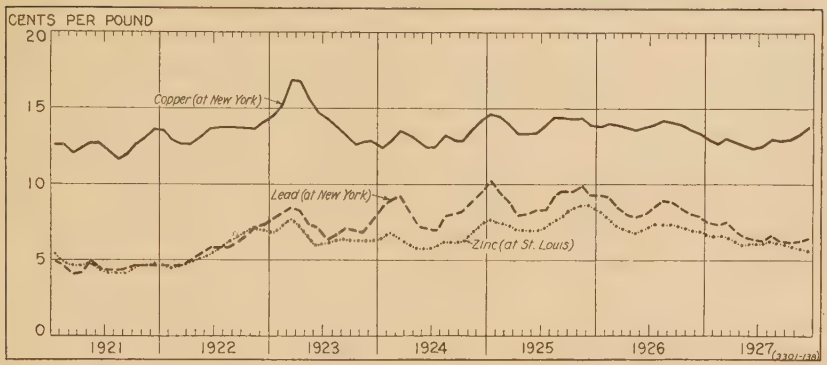


Table 24.—Refined Copper Production, Imports, Exports, Stocks, and Withdrawals on Domestic Account

[Short tons of 2,000 pounds]

Item	1913	1922	1923	1924	1925	1926	1927 [1]	Per cent change, 1927 from 1926
Refinery production, new copper:								
From domestic ore	618,412	452,335	732,082	837,107	841,448	865,649	869,500	+0.4
From foreign ore	189,122	175,423	257,835	292,931	260,839	295,594	289,500	−2.1
Total	807,534	627,758	989,918	1,130,038	1,102,287	1,161,243	1,159,000	−.2
Old copper refined (secondary copper)	136,500	335,900	410,900	388,300	420,210	479,800	[2]	
Imports, refined copper	[3]	51,572	[4] 80,356	72,955	49,887	85,283	51,640	−39.5
Exports, refined copper [5]	408,956	352,513	396,037	536,122	511,168	450,457	490,542	+8.9
Stocks, refined copper end of year	45,193	108,000	132,000	121,500	62,000	73,000	84,000	+15.1
Withdrawals on domestic account:								
New copper	406,134	448,317	650,237	677,371	700,506	785,068	721,000	−8.2
Old copper	136,500	335,900	410,900	388,300	420,210	479,800	[2]	

[1] Preliminary.
[2] Not yet available.
[3] Not reported separately.
[4] Revised figures.
[5] Includes refined copper in ingots, bars, or other simple forms and rods. Figures for 1913 and 1922 include also unrefined black blister and converter copper, the quantity of which, however, was small.

Source: Bureau of Mines, Department of Commerce.

Production, Stocks, and Consumption.

The United States leads the world [1] in the mining of copper, producing from domestic ore in 1927 about 52 per cent of the estimated world total. Our total production of new refined copper during the year was 1,159,000 tons, consisting of 869,500 tons from domestic ore (Chart V) and 289,500 tons from foreign ore. A net reduction of 2,000 tons in total production results from a decrease of 6,000 tons produced from foreign ore and an increase of 4,000 tons from domestic

[1] A table showing world production of copper and statistics of production for foreign countries will be published in Volume II of the Commerce Yearbook.

ore. This decrease amounts to only about one-fifth of 1 per cent of the 1926 production, which was the largest in any year since the war. A large part of the foreign copper refined in the United States comes from mines in Mexico, Chile, Canada, Peru, and the Katanga district (Belgian Congo). Smelter output of unrefined copper from domestic ore was 848,000 tons, which was 2½ per cent less than in 1926, but was exceeded otherwise only during the war years 1916 to 1918. (Table 25.) The output of the smelters and mines, as in each of the four preceding years, was quite steady from month to month. (Table 26.)

Table 25.—Smelter Output of Unrefined Copper

[Quantities in short tons of 2,000 pounds; values in thousands of dollars]

Yearly average or year	Total production, quantity	Smelter output from domestic ore		Year	Total production, quantity	Smelter output from domestic ore	
		Quantity	Value			Quantity	Value
1871–1875		17,136	8,895	1915	843,514	694,005	242,902
1876–1880		24,976	9,679	1916	1,149,050	963,925	474,288
1881–1885		58,867	17,236	1917	1,138,930	943,060	514,911
1886–1890		105,214	30,345	1918	1,154,290	954,267	471,408
1891–1895	[1] 187,502	169,328	37,266	1919	751,572	643,210	239,274
1896–1900	[2] 282,384	265,544	74,424	1920	([4])	604,531	222,461
1901–1905	391,849	366,095	103,859	1921	287,250	252,793	65,221
1906–1910	536,997	490,249	150,924	1922	565,570	475,143	128,289
1911–1915	749,499	610,313	185,592	1923	833,735	717,500	210,945
1916–1920	[3] 1,048,460	821,799	384,470	1924	898,464	817,125	214,087
1921–1925	706,470	619,999	171,275	1925	947,333	837,435	237,832
1910	668,639	540,080	137,180	1926	984,166	869,811	243,547
1911	668,927	548,616	137,154	1927 [5]	968,657	848,000	220,480
1912	777,414	621,634	205,139	Per cent change from 1926	−1.6	−2.5	−9.5
1913	758,398	612,242	189,795				
1914	699,242	575,068	152,968				

[1] For the year 1895. [2] Average for 1897–1900. [3] Average for 1916–1919.
[4] Not available. [5] Preliminary.

Sources: American Bureau of Metal Statistics; Stevens's Handbook, Mineral Industry; and Bureau of Mines, Department of Commerce.

Table 26.—Production of Primary Copper, by Mines and Smelters, by Months

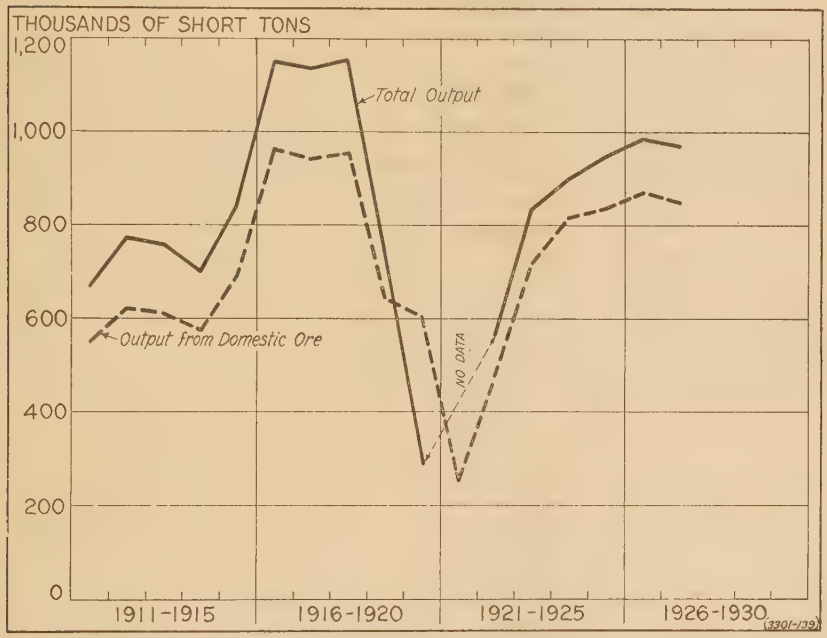
NOTE.—In short tons of 2,000 pounds. Production by mines represents copper content of ore produced by mines in the United States, not actual smelter output; hence annual totals do not agree exactly with those in Table 25. Production by smelters represents copper content of blister produced by smelters in the United States and includes copper obtained from foreign ore, concentrates, matte, or other material; also some blister from the treatment of secondary material.

Month	By mines in United States						By smelters from domestic and foreign ores, etc.					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
January	12,924	56,134	66,631	74,789	71,026	76,198	22,371	62,880	75,734	82,676	78,576	89,719
February	18,707	51,368	65,681	68,967	68,131	69,202	28,883	57,845	73,791	78,237	75,630	80,065
March	31,153	60,781	65,181	74,901	75,728	69,314	38,812	69,676	74,338	87,109	80,719	80,965
April	38,513	59,078	66,073	70,667	73,454	71,122	40,817	67,533	71,072	79,149	85,951	80,940
May	46,024	62,718	65,608	70,574	73,542	71,613	46,024	71,167	75,734	77,041	85,025	82,132
June	47,611	62,740	63,933	59,894	71,317	69,539	51,973	69,109	74,948	76,587	77,166	77,847
July	46,743	63,071	64,787	68,507	72,228	65,545	53,164	69,239	74,072	76,335	76,479	75,029
August	49,863	65,865	66,756	68,090	72,014	67,248	54,223	71,723	73,074	72,861	77,613	78,245
September	47,487	62,255	63,800	67,720	72,627	65,936	55,675	72,247	74,390	76,571	80,320	74,418
October	51,686	66,035	68,989	71,042	75,099	68,959	58,145	76,272	81,003	83,239	87,012	83,551
November	50,804	63,885	68,291	67,400	74,947	68,080	57,743	73,575	74,975	79,292	92,768	79,878
December	52,338	64,832	67,647	69,566	72,396	67,377	57,740	72,469	75,333	79,030	86,907	85,868

Sources: American Bureau of Metal Statistics and Engineering and Mining Journal.

Stocks of refined copper in the hands of domestic refineries on December 31, 1927, were 84,000 short tons, 15 per cent greater than at the end of the previous year. (Table 24.) The stocks of blister copper and material in process of refining, at smelters, in transit to refineries, and at refineries on December 31, 1927, were 190,000 short tons, a decrease of more than 16 per cent since the end of 1926.

Chart V.—SMELTER OUTPUT OF UNREFINED COPPER



Consumption of new copper in the United States was 721,000 short tons, which was 8 per cent less than in 1926 but larger than in any other year. Many new uses continue to be found for copper and expansion of its utilization in the electrical industries continues.

Table 27.—Copper Smelting and Refining Industry

NOTE.—There is large duplication in the cost of materials and value of products for the industry as a whole, due to the refining by certain establishments of copper smelted by other establishments.

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899	47	11,324	61,630	$8,529,021	$122,174,129	$165,131,670	$42,957,541
1909	38	15,628	158,126	13,395,719	333,531,638	378,805,974	45,274,336
1914	37	17,731	194,980	16,149,251	379,157,030	444,021,958	64,864,928
1919	34	17,345	321,610	25,723,371	584,410,173	651,101,591	66,691,418
1921	28	8,293	(1)	11,199,279	205,903,896	234,895,245	28,991,349
1923	29	16,777	332,943	25,459,160	554,099,924	625,432,965	71,333,041
1925	26	15,588	326,509	22,641,626	573,190,428	665,176,767	91,986,339

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Census Statistics.

Census statistics of the copper smelting and refining industry are shown in Table 27. There was a decline between 1923 and 1925 in the number of establishments engaged in this industry and also in the average number of wage earners employed, but the value of products was 6 per cent greater in 1925 than in 1923. The cost of materials constituted between 85 and 90 per cent of the value of products in both 1923 and 1925.

Price Movement and Market Conditions.

During 1927 the price of copper (Table 28) continued below prewar levels, in contrast with the price of most other commodities. It is generally recognized, however, that increased efficiency of production methods has so greatly lowered cost of production that lower prices still permit substantial profits for at least the larger producers. The New York price of electrolytic ingots averaged 12.9 cents per pound in 1927, or 6½ per cent lower than in 1926. The January average of 13 cents was lower than for the opening month of the preceding year and the price sagged to 12.4 cents in June, but recovered to 13.8 cents in December. This was slightly higher than the December price in 1926. (Chart IV.)

Table 28.—Prices of Copper: Electrolytic Ingots at New York

[Cents per pound]

Yearly average or year	Price	Month	1922	1923	1924	1925	1926	1927
1896–1900	[1] 13.4	January	13.5	14.5	12.4	14.7	13.8	13.0
1901–1905	13.9	February	12.9	15.4	12.7	14.5	14.0	12.7
1906–1910	15.6	March	12.6	16.8	13.5	14.0	13.9	13.1
1911–1915	15.0	April	12.6	16.7	13.2	13.3	13.7	12.8
1916–1920	23.0	May	13.1	15.4	12.8	13.3	13.6	12.6
1921–1925	13.5	June	13.6	14.7	12.3	13.4	13.7	12.4
1919	18.7							
1920	17.5	July	13.7	14.3	12.4	13.9	13.9	12.5
1921	12.5	August	13.7	13.8	13.2	14.5	14.2	13.0
1922	13.4	September	13.7	13.3	13.0	14.4	14.1	12.9
1923	14.4	October	13.6	12.6	13.0	14.3	13.9	13.0
1924	13.0	November	13.6	12.7	13.6	14.4	13.6	13.3
1925	14.0	December	14.1	12.8	14.3	13.9	13.3	13.8
1926	13.8							
1927	12.9							

[1] Prices for 1896 to 1898 are for Lake copper.
Source: Engineering and Mining Journal-Press.

Foreign Trade.

The United States, having the greatest copper smelting and refining industry in the world, imports from countries which have less adequate facilities large quantities of copper ore (usually concentrated and unrefined copper) and also a considerable amount of refined copper. (Table 32.) The net exportable surplus of refined copper produced from domestic ore in 1927 was about 148,500 tons, but actual exports were more than three and one-half times that quantity.

Table 29.—Exports (Domestic) and Imports of Copper

NOTE.—Values include total copper. Quantities represent all copper except "Other manufactures." (See Table 30.) Copper content of ore for earlier years was estimated.

[Quantities in short tons; values in thousands of dollars]

Yearly average or year	Exports		Imports		Year	Exports		Imports	
	Quantity	Value	Quantity	Value		Quantity	Value	Quantity	Value
1891–1895 [1]	65,286	14,392	7,661	896	1920	312,027	141,717	242,835	90,019
1896–1900 [1]	137,684	36,745	24,634	5,866	1921	314,402	97,898	175,236	45,785
1901–1905 [1]	190,651	54,942	83,237	22,611	1922	368,428	103,874	270,507	66,829
1906–1910 [1]	289,445	92,334	130,111	38,026	1923	412,375	129,220	338,236	95,988
1911–1915 [1]	416,840	123,655	176,635	46,129	1924	556,106	156,646	384,408	96,184
1916–1920 [2]	376,877	208,909	244,948	103,805	1925	540,376	161,166	326,486	84,270
1921–1925	438,337	129,761	298,975	77,811	1926	482,843	141,204	389,721	99,742
1918	373,845	206,732	287,903	133,525	1927	538,365	150,113	359,161	84,963
1919	258,314	130,790	214,694	86,271					

[1] Fiscal years ended June 30.
[2] Average for period July 1, 1915, to Dec. 31, 1920.
Source: Bureau of Foreign and Domestic Commerce.

Table 30.—Domestic Exports and Imports of Copper

Item	Quantity (short tons of 2,000 pounds)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
DOMESTIC EXPORTS								
Grand total	**556,106**	**540,376**	**482,843**	**538,365**	**156,646**	**161,166**	**141,204**	**150,113**
Copper and manufactures:								
Refined ingots, bars, etc.	504,812	484,033	428,062	461,233	138,298	140,221	121,231	125,378
Rods	31,309	27,135	22,395	29,309	8,965	8,098	6,857	8,870
Wire	4,872	5,833	6,521	5,144	1,702	2,094	2,244	1,689
Old and scrap copper	2,597	6,053	9,713	22,709	566	1,560	2,178	5,027
Pipes and tubes	1,325	1,392	1,627	1,569	672	697	840	777
Plates and sheets	3,386	6,102	2,516	3,537	1,332	2,331	1,075	1,321
Insulated wire and cables	7,736	8,908	9,276	11,245	3,896	4,900	4,816	5,166
Other manufactures					1,186	1,035	1,350	1,099
Ore and unrefined (copper content)	70	920	2,733	3,618	29	233	612	785
IMPORTS								
Grand total	**384,408**	**326,485**	**389,721**	**359,161**	**96,184**	**84,270**	**99,742**	**84,963**
Ore, etc. (copper content), total	73,978	81,664	76,797	84,457	17,625	20,287	19,065	18,997
Ore	52,583	53,821	53,358	49,664	12,807	13,582	13,452	10,757
Concentrates	20,869	26,977	22,375	34,096	4,693	6,492	5,352	8,107
Regulus, coarse metal, etc.	527	866	1,065	697	125	213	261	131
Unrefined, black, converter	235,514	189,667	221,899	219,297	59,462	48,870	56,101	51,954
Refined copper	72,955	49,887	85,283	51,640	18,556	13,831	23,336	13,105
Old and clippings	1,855	5,214	5,501	3,739	402	1,189	1,114	698
Composition metal, copper chief value	104	53	241	29	43	12	64	15
Manufactures of copper					95	81	62	195

Source: Bureau of Foreign and Domestic Commerce.

Exports of copper in all forms amounted to 538,365 short tons (Table 30), valued at $150,113,000, in 1927. This was about 12 per cent more than the exports in 1926, but about 17,700 tons less than

the postwar peak of 1924. Exports of ingots and bars in 1927 constituted 86 per cent of the total exports of copper; rods, 5 per cent; and old copper, 4 per cent. Exports of ingots and bars increased 33,000 tons, or 8 per cent; rods increased 31 per cent; and shipments of old copper and scrap more than doubled. Among the countries that took large quantities of copper in 1927, Germany was the best market for total refined copper and manufactures, taking 128,010 short tons (Table 31), or 24 per cent of our total copper exports; the United Kingdom came next with 17 per cent; then France and the Netherlands with 10 per cent each and Belgium and Italy with 8 per cent each. Exports to France showed the most important decrease, amounting to 36 per cent, while exports to Japan decreased 30 per cent. A notable increase occurred in exports to the Netherlands, which rose from 32,701 tons in 1926 to 56,355 tons in 1927, or 72 per cent. Exports to Germany increased 53 per cent; to Canada, 20 per cent; and to Belgium, 10 per cent. There was also a small increase in exports to Italy and the United Kingdom.

Table 31.—Domestic Exports of Copper, by Principal Countries of Destination

[Short tons of 2,000 pounds]

Country	Total refined copper and manufactures [1]		Refined in ingots, bars, and other forms		Country	Total refined copper and manufactures [1]		Refined in ingots, bars, and other forms	
	1926	1927	1926	1927		1926	1927	1926	1927
Total	**482,843**	**538,365**	**428,062**	**461,233**	Sweden	12,424	11,022	12,356	10,938
					United Kingdom	102,334	105,180	90,160	91,283
Belgium	41,076	45,323	41,029	44,749	Canada	18,080	21,757	7,644	7,728
Denmark	1,154	2,764	434	500	Mexico	2,873	2,792	709	858
France	89,778	57,195	87,575	55,979	India	2,743	3,682	2,208	2,997
Germany	83,633	128,010	76,680	110,921	China	4,298	2,887	4,084	2,820
Italy	41,743	43,581	41,479	43,135	Japan	21,561	15,196	18,672	12,238
Netherlands	32,701	56,355	32,143	52,300	Cuba	2,397	2,816	8	6
Spain	4,842	2,279	4,828	1,885	Other countries	21,205	37,526	8,053	22,896

[1] Figures do not include small quantities of "Other manufactures." See Table 30.
Source: Bureau of Foreign and Domestic Commerce.

Imports of all forms of copper amounted to 359,161 short tons, valued at $84,963,000. This was 31,000 tons, or 8 per cent, less than the postwar peak of 1926. The chief decline was in refined copper and amounted to nearly 40 per cent, owing chiefly to a reduction of 33,000 tons in imports from Chile. Copper content of imported ore and concentrates increased 10 per cent. Our largest copper imports in 1927 came from Chile and amounted to 29 per cent of the total; Mexico and Belgian Congo furnished 16 per cent each; Peru and Canada 15 per cent each. Sixty-one per cent of the imports consist of blister, black, and converter copper; 24 per cent consist of ores, concentrates, and matte; and the remainder is refined copper.

Table 32.—Imports of Copper by Principal Countries of Origin

[Short tons of 2,000 pounds]

Country	Total [1]			Copper ores, concentrates, and matte		Unrefined black, blister, and converter		Refined	
	1913 [2]	1926	1927	1926	1927	1926	1927	1926	1927
Total	203,565	389,721	359,161	76,797	84,457	221,899	219,297	85,283	51,640
Spain	20,866	19,132	4,232	6,740	4,232	12,392			
Canada	34,207	53,390	54,490	27,840	25,517	22,481	25,740		413
Mexico	65,190	52,628	58,155	11,328	16,574	41,160	41,492	105	
Cuba	3,661	10,921	15,139	9,952	14,686		121		18
Chile	20,769	116,352	102,823	17,063	20,405	15,683	31,849	83,436	50,420
Peru	25,430	47,719	52,007	762	1,047	46,954	50,935		
Belgian Congo			57,242		1		57,241		
British South Africa	[3] 1,922	26,302	1,349			26,301	1,349		
Portuguese Africa		42,348				41,882		455	
Other countries	31,520	20,929	13,719	3,112	1,995	15,046	10,570	1,287	789

[1] Figures do not include small quantities of "Other manufactures." See Table 30.
[2] Fiscal year ended June 30.
[3] German Africa.

Source: Bureau of Foreign and Domestic Commerce.

LEAD

SUMMARY.—The United States produced in 1927 about 668,000 tons of new refined lead from domestic ores, 2 per cent less than the record production of 1926. Among the causes contributing to this decrease were the maintenance of a large output of secondary metal and increased use of substitutes for white lead in the paint industry. Storage batteries continued to consume a larger amount of lead than any other use. About 95 per cent of the lead used in storage batteries, however, is later recovered as secondary lead. White lead shows a tendency to be replaced by zinc white, titanium oxide, and lacquers in the manufacture of paints. Imports of ore and matte decreased about 30 per cent in 1927, whereas imports of bullion increased 51 per cent. Total exports of domestic and foreign lead amounted to 125,297 tons in 1927, an increase of 74 per cent. The annual average New York price of lead was 6.8 cents per pound, the lowest since 1922. Quotations were highest during the first quarter of the year, declined to a low point in October, and rose slightly in November and December.

Table 33.—Refined Lead Production, Imports, Exports, Stocks, and Apparent Consumption

[Short tons of 2,000 pounds]

Year	Production of refined lead			Imports of pigs, bars, and old	Exports of domestic and foreign lead [1]	Stocks, end of year	Apparent consumption [2]
	Total	From domestic ore	From foreign ore				
1913	462,460	411,878	50,582	42	44,544		408,226
1919	482,220	424,433	57,787	5,107	51,486	234	434,143
1920	529,657	476,849	52,808	35,719	20,093	1,322	538,020
1921	448,589	398,222	50,367	31,301	26,624	347	444,872
1922	532,662	468,746	63,916	3,551	38,178		492,705
1923	618,322	543,841	74,481	21,099	50,735	2,617	573,543
1924	690,493	566,407	124,086	12,247	82,090	5,045	602,947
1925	766,969	654,921	112,048	7,021	103,520	8,162	655,655
1926	798,941	680,685	118,256	11,152	71,935	10,711	717,653
1927	796,530	668,320	128,210	3,075	125,297	9,464	662,947

[1] Includes domestic exports of pigs, bars, and old produced from domestic and foreign ore, and exports of oreign lead imported in pigs and bars.
[2] Takes into account changes of stocks and exports of lead in manufactures with benefit of drawback.

Source: Bureau of Mines, Department of Commerce.

The Lead Industry in the United States.

The mine production of lead in 1927 amounted to about 664,000 tons as compared with 682,000 tons in 1926, a decrease of 2.7 per cent. The mine production of the Western States was about 376,000 tons in 1927, an increase of about 1.4 per cent over that of 1926. The Mississippi Valley and Eastern States produced about 288,000 tons, a decrease of 7.3 per cent. Southeastern Missouri produced about 202,300 tons; Idaho, 146,800 tons; and Utah, 148,950 tons in 1927.

The material increase of production of both Utah and Idaho resulted from the successful application of selective flotation to the complex sulphide ores of their mines during recent years, and this method has resulted in a materially increased life for many of the mines. Two factors are working in opposition to exhaustion—the steadily increasing return of secondary lead to industry and the increased use of substitutes for white lead and other lead products which are destructible. It may therefore be said that the threat of early exhaustion of known ores has somewhat lessened and that moderately increased prices would tend to make available much ore that can not be exploited under present market conditions at a profit.

Output of primary domestic desilverized lead was 379,000 tons in 1927, an increase of 3.4 per cent. The total production of soft lead amounted to 234,000 tons in 1927, a decrease of 9.5 per cent. The total lead produced from domestic ores amounted to 668,000 tons in 1927, a decrease of 1.8 per cent. The output of lead smelted or refined from foreign ores or bullion increased about 8 per cent to 128,000 tons in 1927. The total lead smelted or refined in 1927 was therefore 796,500 tons, compared with 798,900 tons in 1926. The output of antimonial lead in 1927 was 24,300 tons, which was 1,800 tons more than in 1926.

Table 34.—Production of Refined Lead from Domestic Ore

[Quantities in short tons; values in thousands of dollars]

Yearly average or year	Quantity	Value [1]	Year	Quantity	Value [1]
1871–1875	39,490		1914	412,794	32,198
1876–1880	83,803		1915	507,026	47,660
1881–1885	129,412		1916	552,228	76,207
1886–1890	141,541		1917	548,450	94,333
1891–1895	163,061		1918	539,905	76,667
1896–1900	208,698	15,861	1919	424,433	44,990
1901–1905	282,325	24,280	1920	476,849	76,296
1906–1910	345,698	33,187	1921	398,222	35,840
1911–1915	443,242	39,005	1922	468,746	51,562
1916–1920	508,373	75,239	1923	543,841	76,138
1921–1925	526,427	72,647	1924	566,407	90,625
1910	375,402	33,035	1925	654,921	113,956
1911	391,995	34,496	1926	680,685	108,910
1912	392,517	35,327	1927	668,320	84,210
1913	411,878	36,245	Per cent change from 1926	−1.8	−22.7

[1] The values for years prior to 1917 are based on the average price at New York; from 1917 to 1927 on the total sales by producers.

Source: Bureau of Mines, Department of Commerce.

Census Statistics.

The Census of Manufactures for 1925 shows that, as compared with 1923, there was a decrease in the number of establishments and wage earners in the lead smelting and refining industry, but an increase of almost 25 per cent in the value of products. Cost of materials represented about the same percentage of value of products as at previous censuses, approximately 90 per cent. Average wages increased somewhat during the two-year interval and the primary horsepower employed in the industry was 11 per cent more than in 1923.

Table 35.—Lead Smelting and Refining Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899	39	8,319	16,342	$5,088,684	$144,195,163	$175,466,304	$31,271,141
1909	28	7,424	26,954	5,430,652	151,963,022	167,405,650	15,442,628
1914	22	7,385	29,734	6,134,274	154,014,765	171,578,587	17,563,822
1919	25	6,438	49,668	9,179,615	179,373,646	196,794,519	17,420,873
1921	23	4,509	(1)	5,957,961	134,061,121	150,593,779	16,532,658
1923	20	6,194	42,377	8,767,924	207,314,578	227,735,149	20,420,571
1925	17	6,115	47,219	9,001,580	254,881,029	283,042,542	28,161,513

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Price Movement and Market Conditions.

The lead industry in 1927 was in a less favorable condition than in 1926, owing to the decreased price and the increased stocks throughout most of the year. The world production of lead continued to increase in spite of the decidedly less favorable price.

A few years ago lead was consumed chiefly in paints and other destructible products in which the lead content was not recoverable for industrial uses, but in 1926 the consumption of lead in storage batteries gained the first position, which it continued to hold in 1927. On the other hand, zinc white, titanium oxide, and lacquers, have been substituted to a larger extent for white lead in the manufacture of paints and other destructible products. Much of the lead used in storage batteries is returned to the industry as secondary metal; it has been estimated that 95 per cent of the battery plates are resmelted for secondary metal within 30 months. The item of secondary lead will probably become a great factor in the future supply of lead, and the industries that are using storage batteries and cable sheathings are in reality building up an increased reserve of lead.

The New York price of lead decreased from 8.4 cents a pound in 1926 to 6.8 cents a pound in 1927. As a natural consequence of this decrease of 1.6 cents per pound, the production fell off somewhat. During January, February, and March the price averaged

between 7.4 and 7.6 cents, declined to the low point of 6.2 cents in October, and then advanced at the end of the year, the price in December being 6.5 cents. There was a price decrease of approximately 14 per cent from January to December. (Chart IV.)

Table 36.—Prices of Lead at New York

[Cents per pound]

Yearly average	Price	Year	Price	Month	1926	1927	Month	1926	1927
1896–1900	3.8	1922	5.7	January	9.3	7.6	July	8.5	6.3
1901–1905	4.3	1923	7.3	February	9.2	7.4	August	8.9	6.7
1906–1910	4.8	1924	8.1	March	8.4	7.6	September	8.8	6.3
1911–1915	4.4	1925	9.0	April	8.0	7.1	October	8.4	6.2
1916–1920	7.4	1926	8.4	May	7.8	6.6	November	8.0	6.3
1921–1925	6.9	1927	6.8	June	8.0	6.4	December	7.9	6.5

Source: Engineering and Mining Journal-Press.

The price at Joplin of 80 per cent concentrates was $85 a ton in December, against a price of $97.50 in January, a decrease of 13 per cent during the year.

Foreign Trade.

Imports of refined pig lead amounted to 2,500 short tons in 1927, about 96 per cent of which came from Mexico. The base bullion imported during the same period contained 118,000 tons of lead, which came almost wholly from Mexico. Exports of lead of foreign origin amounted to 123,000 tons, almost twice as much as in 1926. Exports of lead of domestic origin amounted to 2,500 tons, as compared with 4,300 tons exported in 1926. Exclusive of stocks of lead at smelters and refineries and of the amount of lead exported with benefit of drawback, for which figures are not available, it is calculated that the amount of lead available for consumption in 1927 was about 663,000 tons, which was 7.6 per cent less than in 1926.

Table 37.—Lead Exports and Imports

Item	Quantity (short tons of 2,000 pounds)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
EXPORTS								
Domestic:								
In pigs, bars, etc., total	77,766	102,853	71,240	121,491	9,867	15,599	9,412	12,424
From domestic ore	5,332	4,955	4,276	2,533	711	784	601	309
From foreign ore	72,434	97,897	66,964	118,959	9,686	14,814	8,811	12,115
Other lead manufactures	8,003	7,534	12,742	4,941	1,966	2,006	3,297	1,318
Foreign, in pigs, bars, and old	4,324	667	695	3,806	530	97	93	432
IMPORTS								
Ore and matte (lead content)	47,660	44,481	58,116	40,638	4,435	5,163	6,801	4,643
Bullion and base bullion (lead content)	77,751	70,627	78,285	118,284	8,862	10,458	10,096	11,737
Pigs and bars	12,247	6,399	10,017	2,467	1,721	1,066	1,488	348
Scrap, lead, Babbitt metal, solder, etc		622	1,135	608		98	548	932
Type metal (lead content)	645	2,155	3,496	326	101	463	896	65
Other manufactures of lead	224	214	----	----	143	149	164	160

Source: Bureau of Foreign and Domestic Commerce.

ZINC

SUMMARY.—The production of primary zinc from domestic ores in 1927 was 577,000 tons, a decrease of 6 per cent from 1926. Owing to recessions in the automobile and building industries, the apparent consumption of zinc decreased about 7 per cent in 1927. Stocks of slab zinc increased from 27,000 short tons to 53,500 tons during the year. The price of zinc declined from 7 cents in December, 1926, to 5.7 cents in December, 1927, and the average price for the year was 15 per cent lower than in 1926. Exports of zinc metal and manufactures increased slightly over 1926 but were still far below 1924 and 1925 figures; exports to the United Kingdom increased 23 per cent in 1927, whereas France and Germany took 38 per cent less than in 1926. Exports of zinc ore decreased 52 per cent in 1927, owing to decreases in tonnages taken by Belgium and Germany, and imports of ore decreased 35 per cent.

Table 38.—Primary Zinc Production, Imports, Exports, Stocks, and Apparent Consumption

[Short tons of 2,000 pounds]

Year	Production of primary zinc			Imports of blocks, pigs, sheets, etc.	Exports, domestic [1]	Stocks, end of year	Apparent consumption [2]
	Total	From domestic ore	From foreign ore				
1913	346,676	337,252	9,424	6,100	13,810	40,659	295,370
1919	465,743	452,272	13,471	70	141,764	36,793	323,964
1920	463,377	450,045	13,332	[3] 8,177	114,030	71,037	323,043
1921	200,500	198,232	2,268	[3] 7,470	4,825	70,452	203,600
1922	354,277	353,274	1,003	52	33,503	16,890	373,090
1923	510,434	508,335	2,099	21	52,943	27,888	446,514
1924	517,339	515,831	1,508	25	76,241	20,754	448,257
1925	572,946	555,631	17,315	24	80,547	13,080	500,097
1926	618,422	611,991	6,431	22	47,562	26,937	557,026
1927	592,516	576,960	15,556	57	49,617	53,522	516,311

[1] Includes that made from foreign ore; covers zinc in slabs, blocks, pigs, etc., and sheets.
[2] Takes into account changes of stocks and also zinc exported in manufactures with benefit of drawback.
[3] Includes domestic exports returned.
Source: Bureau of Mines, Department of Commerce.

The Zinc Industry of the United States in 1927.

The total value of the zinc produced at the mines in the United States during 1927 is estimated at approximately $91,800,000, a drop of about 21 per cent. The amount of recoverable zinc from the mines decreased to 716,000 tons in 1927, a reduction of nearly 8 per cent. The output of Eastern States was about 117,000 tons, an increase of 13 per cent over 1926; the output of the Central States, about 380,000 tons, a decrease of 17 per cent; and the output of the Western States, about 219,000 tons, an increase of 2 per cent over 1926.

The increased output in the Eastern States practically all came from New Jersey, which produced about 83 per cent of the total. In the Central States the largest curtailment occurred in the tri-State district (Kansas, Oklahoma, and Missouri), which produced 341,900 tons in 1927, a decrease of 19 per cent. Montana, Utah, and Colorado continued to be the leading producers among the Western States. New Mexico, with an increase of 120 per cent in output, replaced Idaho as fourth largest producer in the West.

In the slab-zinc industry production was about 635,000 tons in 1927, approximately 4 per cent less than in 1926. The primary zinc production totaled 592,516 tons, of which 576,960 tons were derived from domestic ore and 15,556 tons from foreign ore of Mexican origin. (See Table 38.) The production of redistilled secondary zinc amounted to 42,784 tons, which represents an increase of about 21 per cent over the 1924 tonnage. The total production of zinc during the same period has increased about 15 per cent, so that the ratio of secondary zinc to total zinc production has shown a slight increase.

In the production of primary slab zinc it is interesting to note the extent to which electrolytic zinc is replacing distilled zinc. In 1917 the electrolytic product represented about 4 per cent of the total, while in 1927 the ratio had increased to 19 per cent. During the same period the production of distilled zinc has of course suffered complementary decreases. Production of slab zinc decreased in all States except Pennsylvania and Montana, where small increases were noted. The latter State produces electrolytic zinc only.

Table 39.—Smelter Production of Primary Zinc from Domestic Ore

[Short tons of 2,000 pounds]

Year or yearly average	Production	Yearly average or year	Production	Year	Production	Year	Production
1875	15,833	1911–1915	346,867	1915	458,135	1923	508,335
1880	23,239	1916–1920	508,731	1916	564,338	1924	515,831
1882–1885	37,467	1921–1925	426,261	1917	584,597	1925	555,631
1886–1890	54,285	1910	252,479	1918	492,405	1926	611,991
1891–1895	82,396	1911	271,621	1919	452,272	1927	576,960
1896–1900	109,963	1912	323,907	1920	450,045	Per cent change from 1926	−5.7
1901–1905	169,504	1913	337,252	1921	198,232		
1906–1910	219,378	1914	343,418	1922	353,274		

Source: Bureau of Mines, Department of Commerce.

The apparent domestic consumption of slab zinc decreased from 557,026 tons in 1926 to 516,371 in 1927, a reduction of about 7 per cent, which was probably due to recessions in the automobile industry and industrial construction activity.

Stocks of slab zinc on hand in smelters at the beginning of 1927 amounted to 26,937 tons, but by December 31, 1927, had increased to 53,522 tons, the highest since 1921. The increase was rapid during the first part of the year, reaching a maximum in June. During the next three months stocks declined somewhat, but in October an upward trend started which continued to the end of the year.

While the production of slab zinc in the United States decreased in 1927 the world production increased. The American Bureau of Metal Statistics reports the 1927 world production of slab zinc at about 1,465,070 short tons, an increase of 7 per cent over 1926. The increase in foreign production came largely from Great Britain,

Polish Silesia, Germany, Belgium, France, and Canada. It is estimated that the world consumption of zinc increased materially in 1927, a substantial increase in zinc consumption having been made in Great Britain, which is the second largest consumer of slab zinc.

During the last few years the domestic supply of zinc in the form of flotation concentrates has increased as a result of the introduction of selective flotation in the Western States. According to statistics of the American Bureau of Metal Statistics, a total of about 38,000 tons of zinc concentrates averaging 39.8 per cent zinc and 11.6 per cent lead were produced in 1927 outside of the tri-State district, while a total of about 500,000 tons were produced, averaging 53.1 per cent zinc and only 2.5 per cent lead. Owing to its finely divided condition, the influx of this large tonnage of concentrates into smelters not particularly suited to the handling of this type of material tended to uneconomic recoveries because of excessive dusting losses.

During 1927 the increased production of flotation concentrates and the diminished supply of the coarse material from the tri-State district created a condition which forced some of the smelters to rely entirely on the flotation product for the operation of their plants. As a result of this situation and the sharp recession in the price of zinc during 1927 the need for more economic recoveries became imperative and the smelting industry was considering an extensive campaign of plant modernization at the end of 1927.

Another important feature of the domestic zinc industry in 1927 was the construction of electrolytic zinc plants at Kellogg, Idaho, and Anaconda, Mont., with daily capacities of 50 and 165 tons of metal, respectively. When completed these plants will increase the electrolytic zinc plant capacity of the United States approximately 64 per cent. In Europe the Waelz process has achieved commercial success and several installations have been made. Experimentation continues with Coley, Ashcroft, and Elmore processes, but no commercial installations have yet been announced.

Table 40.—Zinc Smelting and Refining Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899	31	4,869	11,145	$2,355,921	$13,286,058	$18,188,498	$4,902,440
1909	29	6,655	21,457	4,210,341	25,230,001	34,205,894	8,975,893
1914	29	9,617	36,705	6,699,620	39,572,587	53,538,398	13,965,811
1919	39	13,796	73,604	17,783,278	70,014,728	104,122,938	34,108,210
1921	29	5,778	(1)	7,243,760	24,312,208	37,482,675	13,170,467
1923	35	11,918	69,583	16,895,864	64,134,114	94,183,900	30,049,786
1925	28	11,289	86,368	16,304,701	83,992,110	118,905,590	34,913,480

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Census Statistics.

From the data of the Census of Manufactures for 1925 (Table 40), it appears that there was a slight decline in the number of establishments engaged in the zinc smelting and refining industry as compared with 1923. Value of products, however, increased 26 per cent. The ratio of cost of materials to value of products was higher in 1925 than at any other census since 1914. Average wages showed a slight increase and primary horsepower employed in the industry was 24 per cent larger than in 1923.

Prices.

Prices reacted seriously as a result of the falling off in domestic consumption and the increases in stocks during 1927. The price of 60 per cent grade Prime Western zinc concentrates at Joplin, Mo., which was quoted at $46 per ton on December 31, 1926, according to the Engineering and Mining Journal, fell to $35 at the end of 1927. The quoted prices per pound of Prime Western slab zinc at St. Louis on the same dates were 7 cents and 5.7 cents, respectively. The average price for the year was 6.2 cents as compared with 7.3 cents in 1926. Table 41 shows the price fluctuation at St. Louis from 1896 to 1927, inclusive.

Table 41.—Prices of Zinc at St. Louis

[Cents per pound]

Yearly average	Price	Year	Price	Month	1926	1927	Month	1926	1927
1896–1900	[1] 4.4	1922	5.7	January	8.3	6.7	July	7.4	6.2
1901–1905	[1] 4.9	1923	6.6	February	7.8	6.7	August	7.4	6.3
1906–1910	5.4	1924	6.3	March	7.3	6.7	September	7.4	6.2
1911–1915	7.2	1925	7.6	April	7.0	6.3	October	7.3	6.0
1916–1920	8.8	1926	7.3	May	6.8	6.1	November	7.2	5.8
1921–1925	6.2	1927	6.2	June	7.1	6.2	December	7.0	5.7

[1] From American Bureau of Metal Statistics.
Source: Engineering and Mining Journal-Press.

New York prices are quoted slightly above the St. Louis prices, the difference being due to the freight rate between the two places. The average quoted price of spot zinc in London for the year was 6.2 cents.

Foreign Trade.

Table 42 shows imports and exports of zinc ores and products from 1924 to 1927, inclusive.

The imports of zinc content of ores during 1927 amounted to 9,514 tons, a decrease of 35 per cent compared with 1926. Practically all this ore came from Mexico. Exports of ore and dross decreased from 105,712 tons in 1926 to 51,167 in 1927, largely because of the fact that the tri-State district shipped no concentrates in 1927.

Belgium continued to be the largest recipient of ore, but took less than one-half as much as in 1926, while exports to Germany were 1,800 tons in 1927, which was only about one-tenth as much as in 1926. Ore remaining in warehouses on December 31, 1927, contained 6,144 tons of zinc.

The tonnage of manufactured zinc exported in 1927 increased approximately 5 per cent, but the total value decreased 6.5 per cent. The principal recipient of slab and sheet zinc in 1927 was the United Kingdom, which took 23 per cent more than in 1926. Japan was second, and took 18 per cent of the total exports. Argentina ranked third with 9 per cent, more than doubling its tonnage of 1926. There was a reduction of 38 per cent in the exports to France and Germany.

Table 42.—Exports (Domestic) and Imports of Zinc

NOTE.—Exports of ore, concentrates, and dross are in terms of gross weight and not of zinc content.

Item	Quantity (short tons of 2,000 pounds)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Domestic exports:								
Zinc metal and manufactures	79,004	83,520	49,863	52,257	10,839	13,181	7,989	7,469
Slabs, blocks, or pigs	72,583	76,351	42,835	45,639	9,538	11,654	6,358	6,028
Zinc rolled in sheets, etc	3,658	4,196	4,641	3,922	785	927	1,087	869
Other zinc manufactures	2,763	2,973	2,387	2,695	516	600	544	571
Ore and dross	10,845	84,978	105,712	51,167	974	4,845	5,157	1,987
Imports of ore (zinc content)	4,746	13,537	14,626	9,514	427	1,438	1,520	786

Source: Bureau of Foreign and Domestic Commerce.

ALUMINUM

Sources and Production of Bauxite.

Bauxite, the ore from which aluminum is extracted, occurs in the United States in five States—Arkansas, Georgia, Alabama, Mississippi, and Tennessee. Bauxite is used chiefly for the manufacture of aluminum, aluminum salts, abrasives, refractories, and aluminum alloys. The production of bauxite in 1927 amounted to 321,000 tons, a decrease of 18 per cent as compared with 1926. Arkansas produced about 95 per cent of the total output in 1927, a slightly smaller ratio than in 1926. The entire production of bauxite was sold during the year; 58 per cent was used in the manufacture of metallic aluminum, 22.4 per cent in abrasives, 19.4 per cent in the manufacture of chemicals, and the remainder in the manufacture of cements and refractories.

Production and Uses of Aluminum.

The total value of new aluminum produced in the United States during 1927 was $39,266,000, an increase of 4.5 per cent over 1926. (Table 43.) The curtailment of automobile production during 1927 resulted in some slackening in the demand for aluminum. The

amount of aluminum used in shingles, corrugated sheets, furniture, airships, and railway cars, however, increased as compared with 1926. The principal aluminum-producing plant is at Massena, N. Y., and that plant produced approximately one-half of the total output of the United States in 1927.

Table 43.—Bauxite and Aluminum Production, Exports, Imports, and Apparent Consumption

Item	1913	1921	1922	1923	1924	1925	1926	1927
BAUXITE	*Long tons*	*Long tons*	*Long tons*	*Long tons*	*Long tons*	*Long tons*	*Long tons*	*Long tons*
Domestic production	210,241	139,550	309,600	522,690	347,570	316,540	392,250	320,940
Imports for consumption	21,456	27,587	23,656	119,020	201,974	353,696	281,644	356,580
Exports, domestic	(1)	5,942	19,617	78,560	77,065	78,633	87,770	121,858
ALUMINUM (VALUE)	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Domestic production:								
Primary	9,450	10,906	13,622	28,305	37,607	36,430	37,583	39,266
Secondary	2,199	3,775	6,086	10,825	14,596	24,816	23,868	(2)
Total	11,649	14,681	19,708	39,130	52,203	61,246	61,451	
Imports for consumption	4,784	8,890	9,695	8,743	7,145	10,107	16,779	14,202
Exports, domestic	966	3,109	2,836	3,572	4,172	6,057	4,452	6,307

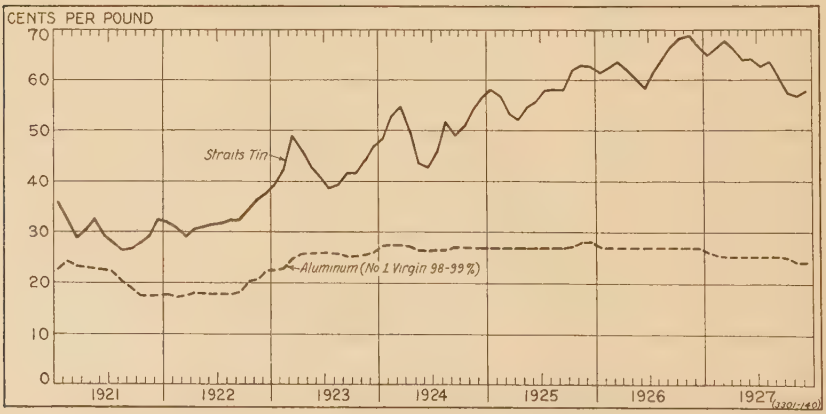
[1] Not reported separately. [2] Not available.

Source: Bureau of Mines, Department of Commerce.

Prices.

The average price of aluminum at New York in 1927 was 25.4 cents a pound as compared with 27 cents in 1926, a decrease of 6 per cent. (Chart VI and Table 44.) The price was highest in January, when

Chart VI.—PRICES OF ALUMINUM AND TIN AT NEW YORK



it averaged 26.4 cents. Quotations declined to 25.6 cents in March, at which level they were stabilized until September. Further declines occurred in October and November, and the price at the end of the year was 24.3 cents per pound. Domestic bauxite was quoted at

$8 per long ton No. 1 chemical ore, f. o. b. Georgia mines, throughout the year. The average Arkansas price was $6.23 a ton, while the Alabama quotation was $6.08. French red bauxite was quoted at $6 to $7.50 a metric ton; Istrian at $5.50 to $7; and Dalmatian, low silica, at $5 to $6.50 a metric ton, c. i. f. eastern ports. Prices of foreign ore remained constant throughout the year.

Table 44.—Prices of Aluminum at New York

[Cents per pound]

Yearly average	Price	Year	Price	Month	1926	1927	Month	1926	1927
1896–1900	37.2	1922	18.7	January	27.0	26.4	July	27.0	25.6
1901–1905	33.8	1923	25.4	February	27.0	25.8	August	27.0	25.6
1906–1910	30.7	1924	27.0	March	27.0	25.6	September	27.0	25.6
1911–1915	23.7	1925	27.2	April	27.0	25.6	October	27.0	25.3
1916–1920	[1] 44.6	1926	27.0	May	27.0	25.6	November	27.0	24.3
1921–1925	23.9	1927	25.4	June	27.0	25.6	December	26.9	24.3

[1] Average for 4 years.

Source: American Metal Market.

Foreign Trade.

The United States imported 357,000 long tons of bauxite for consumption in 1927, an increase of 27 per cent over 1926. Domestic exports of bauxite and other aluminum ores and concentrates increased 39 per cent, amounting to 122,000 tons in 1927.

The value of imports of aluminum and products during 1927 was $15,316,000, a decrease of 11 per cent as compared with 1926. The quantity of plates, bars, and sheets imported was over three times as large as in 1926. Imports of scrap and alloys decreased 4 per cent, while the amount of hollow ware imported was 34 per cent smaller than in 1926.

The value of exports of aluminum and products during 1927 was $6,307,000, an increase of 42 per cent as compared with 1926. Exports of aluminum ingots, scrap, and alloys in 1927 were over six times as large as in 1926, while exports of plates, sheets, bars, and rods increased about 56 per cent. Exports of moldings, castings, and other shapes were 28 per cent smaller in 1927 than in 1926, while the value of kitchen utensils shipped abroad decreased by about 7 per cent. Exports of all other manufactures of aluminum showed an increase of 58 per cent.

TIN

Trade Developments.

The United States depends entirely upon outside sources for tin, but almost one-half of the world production is imported into this country. Alaska produced from placer mines 30.7 tons of tin concentrates, valued at $30,886, which contained about 19 tons of metallic tin. A small amount of concentrate was produced from

placer operations in South Dakota, but none was shipped. Imports of both tin and tin ore in 1927 were smaller than in 1926. Tin imports in bars, blocks, and pigs totaled 159,000,000 pounds in 1927.

Metallic tin exported in 1927 amounted to 2,234 long tons, an increase of 13 per cent over 1926. Stocks at port warehouses in New York at the end of December, 1927, were 1,573 long tons, against 1,909 tons for the same month in 1926, although there was no appreciable decrease from the previous year's average stocks. There is a relatively large secondary recovery of tin that amounts in the United States to about 33,000 tons annually. The world production of tin in 1927, as estimated by various commercial journals, ranged from 150,000 to 157,000 tons, indicating a record output.

Table 45.—Imports of Tin and Tin Ore

Yearly average or year (calendar)	Tin in bars, blocks, pigs, etc.		Tin ore		Year (calendar)	Tin in bars, blocks, pigs, etc.		Tin ore	
	Quantity, 1,000 pounds	Value, 1,000 dollars	Quantity, long tons	Value, 1,000 dollars		Quantity, 1,000 pounds	Value, 1,000 dollars	Quantity, long tons	Value, 1,000 dollars
1881–1885 [1]	23,330	4,949			1915	115,636	38,737	564	211
1886–1890 [1]	31,633	7,095			1916	138,073	51,803	7,179	4,032
1891–1895 [1]	41,838	7,687			1917	143,637	63,629	8,084	4,743
1896–1900 [1]	60,371	10,604			1918	142,507	93,144	16,423	11,444
1901–1905 [1]	81,219	21,550			1919	89,698	50,890	17,139	11,872
1906–1910 [1]	91,678	30,244			1920	126,038	73,787	30,489	18,795
1911–1915 [1]	104,880	41,493			1921	54,201	16,646	13,696	5,673
1916–1920 [2]	127,898	66,486	15,863	10,177	1922	134,833	40,798	12,325	5,504
1921–1925	132,173	56,522	5,812	2,703	1923	154,411	61,092	2,692	2,169
1910	105,138	33,921			1924	145,732	68,953	155	71
1911	106,937	43,391			1925	171,686	95,121	191	98
1912	116,003	50,371	31	15	1926	172,836	104,793	303	187
1913	104,282	46,900	24	11	1927	159,357	100,865	122	79
1914	95,050	32,861	13	3					

[1] Fiscal years ended June 30. [2] Average for period July 1, 1915, to Dec. 31, 1920.
Source: Bureau of Foreign and Domestic Commerce.

Table 46.—Prices of Tin at New York

[Cents per pound]

Yearly average	Price	Year	Price	Month	1926	1927	Month	1926	1927
1896–1900	19.5	1922	31.8	January	61.4	64.8	July	61.4	62.6
1901–1905	28.1	1923	41.8	February	62.6	66.5	August	63.9	63.5
1906–1910	34.3	1924	49.7	March	63.5	67.8	September	66.5	60.7
1911–1915	41.1	1925	56.8	April	62.0	66.1	October	68.2	57.6
1916–1920	[1] 54.2	1926	63.6	May	60.2	63.9	November	68.7	57.1
1921–1925	41.7	1927	62.7	June	58.4	64.2	December	66.6	58.0

[1] Average for 4 years.
Source: Engineering and Mining Journal-Press.

Price Movement and World Supply.

Imports of tin into Europe in 1927 were only slightly larger than before the war, whereas the United States imported 53 per cent more than in 1913. The average New York price of tin was 62.7 cents

per pound in 1927, compared with 63.6 cents in 1926 (Chart VI); and there was a drop in the average December price at New York to 58 cents per pound in response to increased production, improved technology, and the promotion of many new British tin companies. These events have greatly diminished recent apprehension as to future tin supplies, though the known world reserves have not been materially increased and a more rapid rate of production will tend to accelerate depletion.

SIMPLIFICATION IN NONFERROUS METAL PRODUCTS

There were four simplified practice recommendations completed in the nonferrous metal field prior to 1927. During the past year a recommendation was adopted which will reduce the varieties of flashlight cases from 25 to 14. The recommendations previously adopted in regard to forged tools and sterling silver flatware were reaffirmed by their respective industries during 1927.

MACHINERY

GENERAL ASPECTS

The United States has long been distinguished for its machinery, which has developed world recognition for its ingenuity and the liberality with which it has been employed. In earlier decades machinery was looked upon as merely a labor-saving feature, and in foreign countries where the wage level is far below that in the United States it has commonly been considered that the employment of machinery was unnecessary in many fields because of the low wage level. More recently, however, it has come to be recognized that a machine not only saves labor, but that liberality in the use of machinery increases per capita production and perhaps forces an improvement in the wage standard and the standard of living. In the United States our economic development is to a very great degree dependent upon the progress of the machinery building industry, because this industry furnishes the tools, machines, and mechanical equipment required by all other industries. About 57 per cent of the world's machinery is produced in the United States and the per capita domestic demand of machinery is larger than in any other country.

Census Returns—Machinery Industry.

According to the 1925 Census of Manufactures, there were 11,807 establishments making machinery and probably no two of these plants produced exactly the same product, for the machines are of an endless variety as to kind, type, size, unit, and price. It is difficult to prepare a brief analysis of an industry which produces such a miscellaneous assortment of articles as engines, water wheels, electrical machinery, machine tools, agricultural implements, pumps, sewing machines, and typewriters.

The development of the entire machinery industry from 1914 to 1925 is shown in Table 1. The industry showed a very rapid expansion during the war period and the census of 1919 indicated that the number of workers had increased by more than half since 1914, while both the total value of the product and the value added by manufacture were more than three times as great as before the war. After the marked depression in 1921 the machinery industries again expanded their operations, with the result that the total value of products in 1925 exceeded $5,000,000,000 and was 5.3 per cent larger than in 1919. Between 1923 and 1925 the average number of wage

earners was reduced by 5.4 per cent, while the total horsepower of prime movers installed showed an increase of 18 per cent. The increase in the total value of output of 6.2 per cent in this two-year period and a gain of 7 per cent in value added by manufacture indicate that the increased use of power has resulted in a considerable expansion of the output per wage earner.

There were more wage earners employed in the machine manufacturing industries in 1925 than in any other group of manufactures except textiles and lumber. It ranked second in value added by manufacture, being surpassed only by the textiles group. (Table 1.)

Table 1.—The Machinery Industries

Year and industry	Establishments	Wage earners (average number)	Primary horsepower	In thousands of dollars			
				Wages	Cost of materials	Value of product	Value added by manufacture
1914	13,457	618,737	1,256,908	412,406	662,967	1,582,409	919,442
1919	14,821	998,484	2,060,325	1,240,487	1,973,455	4,768,671	2,795,216
1921	12,395	662,277	(1)	832,781	1,361,163	3,235,075	1,873,912
1923	12,147	907,707	2,300,443	1,253,743	1,891,524	4,727,818	2,836,294
1925	11,807	858,843	2,714,377	1,225,359	1,985,367	5,020,281	3,034,914
MAJOR INDUSTRIES, 1925							
Agricultural implements	303	28,696	115,325	37,388	73,850	169,468	95,618
Cash registers and calculating machines	41	13,296	14,016	21,142	11,166	98,384	87,218
Electrical machinery	1,739	239,921	589,398	323,834	636,692	1,540,002	903,310
Engines and water wheels	220	51,099	224,194	73,585	145,784	313,588	167,804
Foundry and machine shops	8,154	397,838	1,424,259	590,801	883,708	2,232,986	1,349,278
Gas machines and gas and water meters	61	5,514	7,375	7,429	13,038	34,292	21,254
Metal-working machinery (including machine tools)	378	36,825	147,418	55,932	54,524	175,592	121,068
Pumps (hand and power) and equipment	253	17,935	56,470	25,278	50,328	120,148	69,820
Sewing machines, cases, etc	41	12,121	27,439	16,100	18,610	46,299	27,689
Textile machinery and parts	379	27,869	61,738	37,464	39,037	121,653	82,616
Typewriters and supplies	70	14,969	15,568	18,803	15,157	63,080	47,923
Washing machines, clothes wringers, etc., for domestic use	82	7,077	18,028	9,990	32,748	69,568	36,820

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Growth of the Industry.

The growth of the machine manufacturing industry is naturally dependent upon the progress made by other industries, which in recent years has been rapid. In the machine manufacturing industry between 1914 and 1925 the number of wage earners increased 39 per cent, the value added by manufacture 230 per cent, and the value of the product increased 217 per cent. The machinery industry has not been behind other manufacturing industries in installing machinery and increasing its use of power; the horsepower of prime movers in the machinery manufacturing industry increased 116 per cent between 1914 and 1925. In 1914 each worker was aided by 2 horsepower and in 1925 by 3.2 horsepower.

Importance of Various Branches of the Industry.

In 1925 foundries and machine shops were much the most important branch of the machinery industry, with about 46 per cent of the workers, about 45 per cent of the value of products, and about 52 per cent of the primary horsepower. Next in importance was the electrical machinery group with about 28 per cent of the wage earners, about 31 per cent of the value of products, and about 22 per cent of the primary horsepower. Engines and water wheels ranked third, while machine tools and agricultural implements followed in the order named. Office machinery, which consists primarily of typewriters, cash registers, and adding and calculating machines, had a total value of production in 1925 only slightly smaller than that of agricultural implements, while the value added to materials by manufacture was substantially larger. The office equipment industries, on the other hand, use much less horsepower in factories than any of the other major groups.

The value of output of the principal groups of machinery industries is shown in Table 2 for each census year since 1914. The value for all the important groups was very much greater in 1925 than before the World War, but there has been a great difference in development of the various industries since 1919; the electrical machinery and miscellaneous machinery industries have shown increases of 55 per cent and 18 per cent, respectively, while the value of output of the industrial machinery group declined 6 per cent and that of the agricultural machinery industry was 44 per cent smaller in 1925 than in 1919. Comparisons with 1923 show a growth in the value of output for each of these machinery groups, except industrial machinery, which was practically unchanged.

Table 2.—Value of Output of Principal Groups of Machinery Industries (Other than Vehicles)

NOTE.—Data as to the more specific classes of industrial, electrical, and agricultural machinery are presented in Tables 5, 17, and 21.

[In thousands of dollars]

Group and industry	1914	1919	1921	1923	1925
The machinery group	**1,582,409**	**4,768,671**	**3,235,075**	**4,727,818**	**5,020,281**
Industrial machinery	978,064	3,200,184	2,053,609	3,009,118	2,998,260
Electrical machinery	335,170	997,968	833,985	1,293,002	1,540,002
Agricultural implements	164,087	304,961	163,817	151,286	169,468
Miscellaneous machinery	105,088	265,558	183,664	274,412	312,551
Cash registers and calculating machines	30,520	83,539	53,653	95,106	98,384
Scales and balances	9,734	20,641	15,885	24,157	27,237
Sewing machines, cases, and attachments	27,238	57,938	35,608	45,967	46,299
Typewriters and supplies	24,500	52,738	41,790	52,498	63,080
Washing machines, clothes wringers, etc., for domestic use	7,600	40,771	30,199	50,373	69,568
Windmills and windmill towers	5,496	9,932	6,530	6,311	7,984

Source: Bureau of the Census.

The value of output of the typewriter industry was 20 per cent larger in 1925 than in 1923 and was substantially greater than in any earlier census year. The value of cash registers and calculating machines also showed a slight increase as compared with 1923.

Other important industries in the miscellaneous machinery group are sewing machines, washing machines, and clothes wringers. The value of output of the sewing machine industry in 1925 was greater than in any other census year except 1919. Washing machines and clothes wringers increased 38 per cent between 1923 and 1925 and in 1925 had a higher value than in any other census year.

Machinery Exports.

Machinery as a whole remained the third most important commodity in our export trade during 1927 and constituted 9.2 per cent of the total value of exports. Machinery exports reached an aggregate value of $436,000,000 (Table 3), which was 9 per cent more than in 1926 and was the highest on record except in 1920, when prices were very high. Each of the principal groups of machinery industries has shown a steady expansion in the value of its export trade since 1922. Exports of agricultural machinery more than trebled during this period, exports of office machinery more than doubled, and there was also a substantial growth in exports of electrical and industrial machinery.

Exports of office machinery from the United States reached a total value of $44,094,000 in 1927, which was 21 per cent more than in 1926. There were pronounced increases in all classes of office machinery, only one class registering a gain less than 20 per cent. The importance of the export trade in office appliances is much greater than its total value indicates, as the sales of this type of equipment in foreign countries usually pave the way for the sale of other American merchandise.

Table 3.—Exports of Machinery, Other Than Vehicles

NOTE.—Data as to the more specific classes of industrial, electrical, and agricultural machinery are presented in Tables 10, 18, and 23.

[Value in thousands of dollars]

Group and commodity	1922	1923	1924	1925	1926	1927
Total machinery exports	**234,486**	**282,172**	**311,448**	**367,815**	**399,868**	**436,153**
Industrial machinery	129,910	141,651	145,435	172,912	179,556	201,456
Electrical machinery, apparatus, and supplies	53,147	59,927	69,828	73,790	84,226	84,610
Agricultural machinery	26,060	50,373	59,649	77,354	85,499	90,747
Office machinery and appliances	17,386	21,728	26,425	33,859	36,311	44,094
Accounting and calculating machines	2,048	3,365	5,965	8,226	8,700	11,475
Addressing and duplicating machines	221	422	518	641	431	594
Typewriters and parts	11,972	14,362	15,878	19,652	19,090	21,866
Other office appliances	3,144	3,579	4,064	5,340	8,090	10,159
Printing machinery	7,983	8,493	10,111	9,900	14,276	15,246
Typesetting machines	3,828	3,890	3,530	3,447	3,740	4,504
Printing presses	4,155	4,603	4,825	4,798	6,232	6,251
Other printing machinery and accessories			1,755	1,655	4,303	4,491

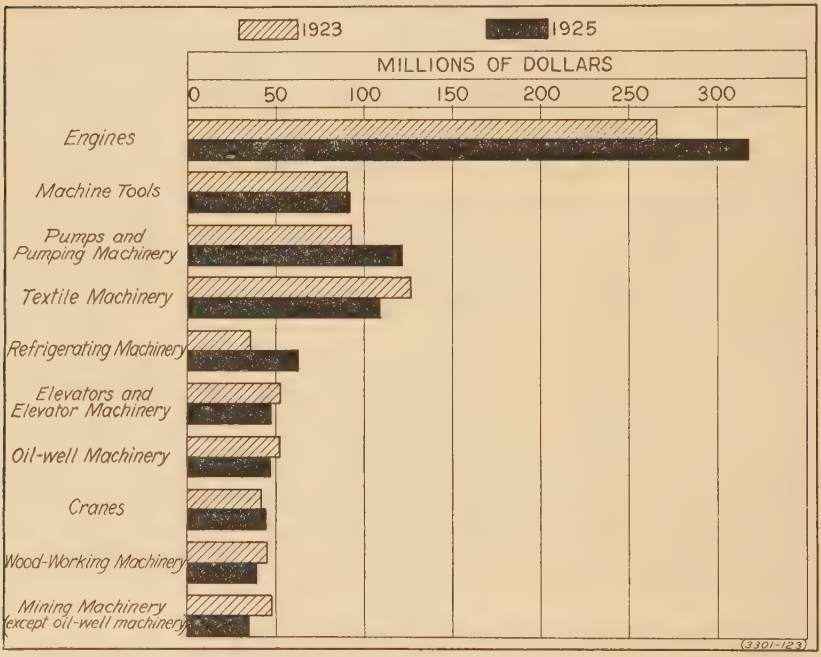
Source: Bureau of Foreign and Domestic Commerce.

INDUSTRIAL MACHINERY

GENERAL POSITION—PRODUCTION

The industrial machinery manufacturing industry of the United States includes nearly 10,000 factories usually employing more than 500,000 workmen, and it is probably true that no two of these shops produce just the same sort of equipment. It is impossible to subdivide the industry into branches, because few, if any, of these can be satisfactorily defined on account of overlapping.

Chart I.—VALUE OF PRINCIPAL CLASSES OF INDUSTRIAL MACHINERY MANUFACTURED



The magnitude of the industrial machinery industry and the changes therein since 1914 are set forth in Table 4, which includes the following branches as classified by the Census Bureau: Foundry and machine-shop products, gas machines and gas and water meters, machine tools, pumps (both power and other), textile machinery, and engines and water wheels. Each establishment is classified according to its principal product; some of those included make other products as well as machinery, and some machinery is made by establishments not included in this tabulation.

It is interesting to note that the horsepower available per workman increased from 2.1 in 1914 to nearly 3.6 in 1925. Similarly the value added by manufacture per workman, which in 1914 was $1,410, by

1925 had increased to $3,370, a striking testimonial to the advance in manufacturing efficiency shown by the industry. It is also significant that the ratio of the value added by manufacture to the cost of materials increased slightly between 1914 and 1925.

Table 4.—The Industrial Machinery Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				In thousands of dollars			
1914	11,392	405,422	848,749	274,432	405,159	978,064	572,905
1919	12,483	666,979	1,413,335	856,442	1,317,008	3,200,184	1,883,176
1921	10,364	425,728	[1]	547,628	869,748	2,053,609	1,183,860
1923	9,848	586,994	1,610,604	834,416	1,200,253	3,009,118	1,808,865
1925	9,445	537,080	1,921,454	790,489	1,186,420	2,998,260	1,811,840

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Chart I and Table 5 show the types of machinery represented in the above totals. It will be noted that in almost every instance the 1925 and 1923 values of production were well above those of 1921 and 1914, but between the years 1923 and 1925 the trend varied in particular branches, although the total for the industry indicated marked progress. Allowance should, of course, be made for the general change in price levels between 1914 and 1925.

Table 5.—Value of Principal Classes of Machinery Manufactured, Other Than Electrical and Agricultural

[In thousands of dollars]

Class	1914	1919	1921	1923	1925
Engines [1]	97,835	501,674	186,488	266,040	317,255
Metal-working machinery	[2]	[2]	[2]	[2]	138,812
Machine tools	[2]	[2]	[2]	89,964	91,459
Metal-working machinery, other than machine tools	[2]	[2]	[2]	[2]	47,353
Pumps and pumping machinery	27,457	66,456	69,255	92,815	[3] 121,299
Textile machinery and parts	[4]	118,044	115,167	127,406	109,354
Refrigerating machinery	10,522	30,667	33,174	36,542	62,593
Elevators and elevator machinery	17,288	70,187	40,931	52,516	47,430
Oil-well machinery	10,569	28,351	27,415	52,158	47,299
Cranes	4,194	52,534	20,445	42,197	43,936
Wood-working machinery	13,393	36,763	25,682	44,447	39,620
Mining machinery, exclusive of oil-well machinery	13,254	51,243	30,290	47,590	34,827
Air compressors	5,158	18,650	15,729	27,762	29,473
Power shovels	[4]	12,454	12,858	23,684	26,609
Road-making machines	3,545	15,778	17,858	24,264	26,297
Meters, gas and water	11,638	[2]	18,181	23,397	24,502
Laundry machines	7,565	13,891	12,983	19,077	24,198
Paper mill and pulp mill machinery	8,588	27,421	31,581	18,736	21,209
Dredging and excavating machinery	2,969	9,108	4,991	16,622	19,232
Bakers' machinery	2,555	9,359	10,560	14,451	17,212
Blowers and fans	[4]	12,141	12,518	14,386	16,210

[1] Steam or internal-combustion engines, water wheels, and parts, not including steam boilers, made for sale as separate units.

[2] No comparable data.

[3] Includes both hand and power pumps and equipment; data for earlier years are for power pumps and equipment only.

[4] Not reported separately.

Source: Bureau of the Census.

Employment.

Table 4 indicates the broad trends in employment between the different census years, while Table 6 shows the monthly changes in employment for the foundry and machine-shop industry since 1920 as reported by the National Industrial Conference Board. Employment in 1927 was smaller than in 1926 and at the end of the year reached about the same low level as in the summer of 1924. The volume of employment, however, continued to be substantially larger than during 1921 and the first half of 1922.

Table 6.—Index Numbers of Employment in Foundry and Machine-Shop Products Industry

Period of one week in—	1920	1921	1922	1923	1924	1925	1926	1927
January		76.4	54.2	87.8	81.4	75.2	77.1	78.6
February		72.9	56.5	88.4	82.2	74.9	81.6	78.1
March		67.5	59.1	91.4	82.1	75.6	83.5	78.6
April		61.0	62.3	91.7	81.3	75.2	84.0	78.2
May		57.2	65.7	92.4	80.0	74.1	83.5	78.1
June	100.0	55.2	68.8	92.7	76.4	73.6	83.3	77.9
July	100.6	51.2	72.1	91.9	73.3	74.1	82.0	77.1
August	100.7	49.7	73.6	91.2	70.5	72.9	80.6	75.5
September	100.7	49.7	75.8	90.5	70.9	73.6	80.9	75.4
October	98.3	51.0	79.4	90.6	73.3	74.0	79.7	74.2
November	93.2	53.5	82.5	86.4	72.6	74.9	78.7	71.9
December	86.2	55.1	85.3	85.0	73.4	76.1	77.5	70.5

Source: National Industrial Conference Board (Inc.).

Table 7.—Index of Value of New Orders of Foundry Equipment

NOTE.—Compiled by the Foundry Equipment Manufacturers' Association from reports of 11 to 18 members representing 65 to 70 per cent of the foundry equipment industry.

[Average monthly shipments 1922-1924=100]

Month	1921	1922	1923	1924	1925	1926	1927
Year	**36**	**93**	**133**	**105**	**133**	**141**	**124**
January	31	45	157	142	104	168	180
February	35	37	144	121	109	155	198
March	39	94	161	122	159	157	131
April	31	93	152	147	124	113	130
May	42	124	175	108	113	129	135
June	26	132	142	96	111	134	138
July	51	88	118	63	117	127	90
August	23	114	119	78	190	141	106
September	39	73	78	66	94	114	80
October	43	107	115	86	150	141	98
November	37	99	92	91	180	133	96
December	33	112	138	138	140	181	107

Source: Department of Commerce, Survey of Current Business.

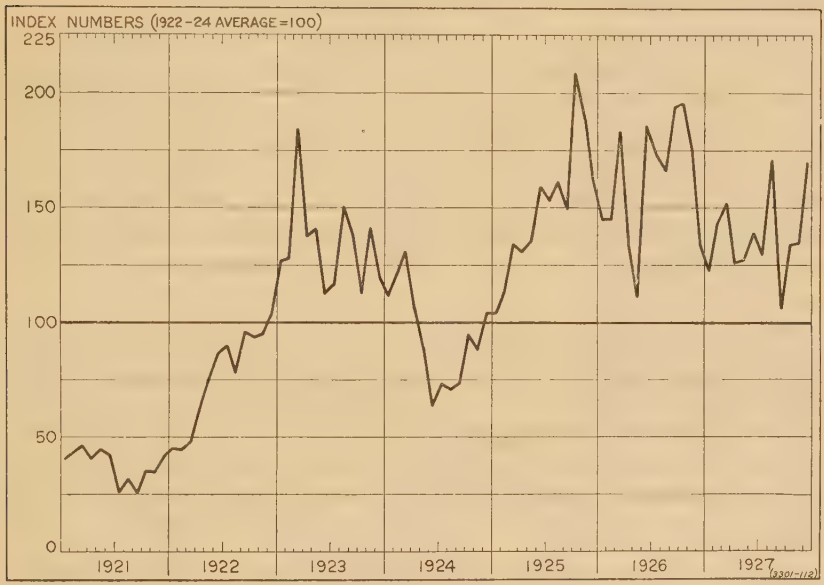
Foundry Equipment and Machine Tools.

The sales of equipment used in the manufacture of machinery itself probably indicate in a general way the expansion of American industry as a whole, being a measure of the demand for increased factory capacity and indirectly suggesting the rate at which industry is expanding or improving its equipment. Table 7, based upon reports from the Foundry Equipment Manufacturers' Association, indicates the changes that have taken place since 1921. While the total

business for 1927 was below the level of 1926, a strong upward trend developed in September and the new orders received in December were larger than in any month since June.

New orders reported by the National Machine Tool Builders' Association are shown in Chart II and Table 8. As in the case of

Chart II.—NEW ORDERS FOR MACHINE TOOLS: BETWEEN 50 AND 60 REPORTING FIRMS



foundry equipment, new orders for machine tools were smaller in 1927 than in 1926, but were larger than in any other recent year except 1925. In October, 1927, a large expansion of orders commenced which continued until the end of the year.

Table 8.—Machine Tools: Index of Value of New Orders

NOTE.—Made from reports of dollar figures of gross new orders, reduced to percentage of average monthly shipments for years 1922-1924 as 100, from between 50 and 60 firms, said to represent about one-third of the industry.

Month	1921	1922	1923	1924	1925	1926	1927
Year	38	77	134	94	150	162	138
January	41	45	127	112	104	145	123
February	43	45	128	122	114	146	143
March	46	48	185	131	134	183	152
April	42	62	138	107	131	134	126
May	44	75	141	88	135	112	127
June	42	87	113	64	159	186	139
July	26	90	117	73	153	173	129
August	32	79	151	71	161	167	170
September	25	96	139	74	149	194	106
October	35	94	114	95	208	195	133
November	35	95	141	89	189	175	134
December	42	104	119	104	162	134	169

Source: Department of Commerce, Survey of Current Business, compiled by National Machine Tool Builders' Association.

The demand for machinery is related to the demand for industrial building. Table 1 in the section on Construction shows that the floor space and value of contracts for new industrial buildings increased consistently during recent years up to 1926, but in 1927 there was a very marked reduction. This new construction creates a demand for new factory machinery, although the values shown refer to buildings and not to equipment.

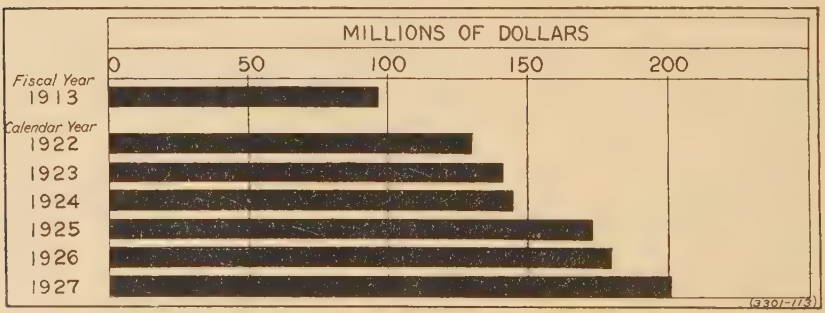
Progress in Simplification.

Simplified-practice recommendations have been adopted for the following machinery items: Milling cutters, die-head chasers, carbon brushes and brush shunts, and metal spools. The recommendation in regard to metal spools was completed during 1927 and reduced the number of types to 37. The recommendation for die-head chasers was reaffirmed during 1927, at which time the standing committee reported that the average degree of adherence to the recommendation was 80 per cent.

Exports.

The United States now provides about 35 per cent of the world's exports of machinery as compared with 27 per cent before the war, which indicates that there has been important progress made in marketing American machinery abroad. Table 9 shows the expansion in value of exports of industrial machinery since 1910. There has been a consistent growth of such exports during the past five years and exports in 1927 were 55 per cent larger than in 1922.

Chart III.—VALUE OF TOTAL EXPORTS OF INDUSTRIAL MACHINERY



By comparing Tables 4 and 9 it is possible to estimate the percentage of American industrial machinery that is exported, which was about 9 per cent for 1914 and 1919, about 12 per cent for 1921, and 6 per cent for 1925. Unquestionably there is still a great unsatiated market for American machinery in foreign countries, and it is anticipated that this ratio will improve rapidly as conditions in various foreign countries become more favorable.

Table 9.—Value of Total Exports of Industrial Machinery

NOTE.—Totals in this and subsequent tables have been revised to include all and only items classed as industrial machinery under the new classification adopted January 1, 1926.

Year [1]	Value	Year [1]	Value	Year [1]	Value
1910	$56, 807, 156	1917	$224, 404, 774	1923	$141, 651, 109
1911	74, 242, 880	1918	232, 808, 151	1924	145, 435, 032
1912	78, 549, 376	1918	220, 582, 872	1925	172, 911, 903
1913	97, 038, 460	1919	295, 570, 981	1926	179, 556, 215
1914	86, 126, 520	1920	360, 761, 547	1927	201, 455, 502
1915	80, 100, 988	1921	243, 671, 517		
1916	156, 331, 210	1922	129, 910, 236		

[1] Fiscal years to and including 1918. Also calendar years for 1918 and thereafter.
Source: Bureau of Foreign and Domestic Commerce.

Table 10 indicates the degree to which the exports of particular types of machinery have fluctuated during recent years. Particularly noteworthy is the development abroad of a market for road-making machinery, cranes, and other construction equipment. Our exports of air compressors and refrigerating machinery in 1927 increased 26 per cent and 47 per cent, respectively, over 1926.

Exports of paper and pulp mill machinery in 1927 about equaled those of 1926, but were more than double the exports of 1925. A particularly large foreign demand for American metal-working machinery has developed and the exports in 1927 increased 35 per cent over 1926. An important demand has been created abroad for American oil-well machinery, owing to the development of foreign petroleum fields.

Table 10.—Value of Exports of Principal Classes of Industrial Machinery

[In thousands of dollars]

Class	1921	1922	1923	1924	1925	1926	1927
Industrial machinery	**243, 672**	**129, 910**	**141, 651**	**145, 435**	**172, 912**	**179, 556**	**201, 456**
Steam engines and parts, except locomotives	20, 586	8, 460	8, 238	9, 060	9, 723	9, 598	9, 600
Locomotives	33, 696	8, 664	4, 422	5, 649	7, 022	5, 113	5, 327
Internal-combustion engines, except for automobiles, tractors, and aircraft	4, 023	6, 166	8, 354	8, 463	10, 773	13, 388	10, 324
Construction and conveying machinery:							
Excavating and dredging equipment	2, 281	1, 390	1, 518	2, 233	4, 018	5, 730	7, 175
Road-making equipment	990	363	921	1, 195	1, 430	1, 688	2, 218
Cranes	----------	865	803	1, 304	1, 379	1, 585	1, 638
Hoists and derricks, except mining	----------	703	784	886	1, 172	1, 237	1, 156
Elevators, freight and passenger	----------	752	842	789	761	938	1, 072
Other equipment and parts	2, 561	3, 252	4, 255	4, 253	4, 078	5, 868	5, 868
Mining and quarrying machinery	7, 564	6, 571	10, 137	10, 078	10, 562	14, 857	13, 190
Oil-well machinery	11, 307	4, 231	6, 626	6, 399	10, 249	15, 306	16, 843
Pumping machinery and parts	11, 966	6, 048	7, 462	7, 119	7, 593	8, 187	8, 549
Metal-working machinery	19, 636	12, 209	13, 105	14, 590	22, 037	18, 868	25, 379
Textile machinery	19, 928	13, 726	9, 044	8, 752	11, 489	10, 400	11, 466
Sewing machines and parts	7, 306	9, 136	10, 905	10, 515	10, 634	10, 175	10, 679
Shoe machinery, except sewing	1, 797	1, 054	1, 324	1, 473	1, 370	1, 353	1, 718
Sugar-mill machinery	15, 628	3, 799	6, 023	8, 305	8, 270	4, 043	5, 824
Paper and pulp mill machinery	2, 988	1, 827	2, 007	2, 131	1, 717	3, 846	3, 823
Refrigerating and ice-making equipment	1, 913	1, 906	2, 265	2, 180	2, 485	5, 059	7, 447
Air compressors	3, 906	2, 218	2, 628	2, 959	3, 887	4, 665	5, 873
All other industrial machinery	75, 596	36, 571	39, 989	37, 104	42, 261	37, 651	46, 287

Source: Bureau of Foreign and Domestic Commerce.

Table 11.—Exports of Industrial Machinery, by Regions of Destination

[Value in thousands of dollars]

Destination	1910 [1]	1913 [1]	1919	1924	1925	1926	1927
Grand total	[2] 56,807	[2] 97,038	295,571	145,435	172,912	179,556	201,456
Canada, Newfoundland, etc	12,745	27,214	42,456	24,603	28,683	36,271	41,991
Europe	17,895	30,940	102,914	34,571	49,197	42,384	56,339
South America	7,318	13,244	26,207	22,360	32,674	41,342	40,571
Mexico and Central America	7,507	7,350	11,050	14,483	15,864	14,559	13,212
West Indies and Bermudas	3,280	5,717	22,110	14,088	15,721	8,960	12,353
Total Latin America	18,105	26,311	59,367	50,931	64,258	64,861	66,136
Asia	4,035	7,265	74,607	25,186	19,182	21,935	22,971
Oceania	2,497	3,711	5,965	6,290	6,974	8,349	8,594
Africa	1,529	1,597	10,244	3,853	4,608	5,755	5,421
Other countries	----------	1	19	1	10	2	5
Percentage to:	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Canada, Newfoundland, etc	22.4	28.0	14.4	16.9	16.6	20.2	20.8
Europe	31.5	31.9	34.8	23.8	28.5	23.6	28.0
Latin America	31.9	27.1	20.1	35.0	37.2	36.1	32.8
Asia	7.1	7.5	25.2	17.3	11.1	12.2	11.4
Oceania	4.4	3.8	2.0	4.3	4.0	4.6	4.3
Africa	2.7	1.6	3.5	2.6	2.7	3.2	2.7

[1] Year ended June 30.
[2] The years 1910 and 1913 are not strictly comparable with later years, owing to the inclusion in both years of "Parts of cash registers"; in 1910 also were included "Adding and calculating machines," "Cream separators," "Gasoline-marine engines," "Lawn mowers," and "Typesetting and linotype machines," all of which items are not classed as industrial machinery but were not separated in the earlier years, being included with the items "All other machinery and parts of" and "All other engines and parts of."

Source: Bureau of Foreign and Domestic Commerce.

Table 12.—Exports of Industrial Machinery, by Countries of Destination

[Value in thousands of dollars]

Country	1913 [1]	1926	1927	Country	1913 [1]	1926	1927
Total, all countries	[2] 97,038	179,556	201,456	Spain	921	1,435	2,252
				Italy	913	2,052	1,859
Canada	27,081	36,003	41,445	British Malaya	109	1,036	1,316
United Kingdom	11,475	19,433	26,138	Sweden	427	897	1,184
Mexico	5,628	11,785	10,499	New Zealand	529	1,401	1,162
Cuba	4,417	6,632	8,886	Netherlands	1,040	711	1,149
Argentina	2,817	7,048	8,589	China	412	2,099	1,112
Venezuela	498	8,521	7,872	Uruguay	413	773	1,020
Brazil	6,359	5,721	7,616	Portuguese Africa	301	683	1,011
Australia	3,144	6,884	7,396	Panama	769	683	985
Japan	3,605	[3] 7,913	[3] 7,232	Dominican Republic	895	805	972
Germany	5,558	3,298	7,056	Belgium	1,333	1,060	949
Russia in Europe	3,236	4,389	6,669	Rumania	276	1,350	909
Colombia	828	5,800	5,753	Bolivia	142	756	710
Chile	1,161	8,024	5,062	Guatemala	189	555	521
France	3,688	4,709	4,913	Norway	280	505	479
British India	622	3,402	4,196	Switzerland	81	212	390
Philippine Islands	1,661	2,592	3,962	Salvador	172	628	332
British South Africa	1,098	4,145	3,432	Nicaragua	187	317	271
Peru	807	3,995	3,353	All other	3,539	8,167	9,848
Netherland East Indies	427	3,137	2,956				

[1] Year ended June 30.
[2] Includes parts of cash registers, not separately shown for 1913.
[3] Includes Chosen.

Source: Bureau of Foreign and Domestic Commerce.

In the last four years Latin America has absorbed about one-third of our exports of industrial machinery, which testifies to the rapid development of that area. Shipments of machinery to Asia declined sharply from 1919 to 1925, but expanded about 20 per cent during the

past two years. Asia is in need of a very large volume of machinery, but economic, political, and other conditions there make it exceedingly difficult to establish and develop new industries. Trade with Europe, Canada, and Newfoundland has shown a healthy expansion during the last few years; exports to Europe in 1927 were about 33 per cent larger than in 1926 and to Canada and Newfoundland about 16 per cent larger. Europe now absorbs about 28 per cent of our exports of industrial machinery, while Canada and Newfoundland in 1927 absorbed about 21 per cent. Table 11 gives the details regarding shipments by trade regions in pre-war and post-war years, and Table 12 gives similar information regarding the more important individual countries.

RAILWAY LOCOMOTIVES AND CARS

The locomotive and car building industries of the United States supply practically all the equipment for its entire railway system, comprising about 250,000 miles of line. The United States ranks first in the manufacture of railway cars and locomotives, a position which is the natural result of its advantages in production of iron and steel products and of the great extent of its railways.

Table 13.—Railway-Equipment Industries—Census Statistics

RAILROAD-LOCOMOTIVE INDUSTRY

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1904	15	24,806	29,806	$15,798,432	$27,702,930	$59,552,092	$31,849,162
1909	16	14,909	35,102	8,914,266	15,059,983	31,582,302	16,522,319
1914	19	17,391	50,373	11,085,375	23,546,118	43,374,141	19,828,023
1919	17	26,715	96,504	38,798,641	72,375,950	156,269,730	83,893,780
1921	22	16,583	(1)	20,472,715	55,411,656	102,023,358	46,611,702
1923	19	30,672	91,214	51,866,976	124,261,528	215,392,951	91,131,423
1925	18	12,809	114,209	18,218,843	41,717,142	65,389,134	23,671,992

STEAM AND ELECTRIC RAILROAD CAR INDUSTRY

1899	85	37,038	38,200	$18,938,170	$65,709,610	$97,815,548	$32,105,938
1904	87	38,788	63,048	23,087,400	80,998,570	122,019,506	41,020,936
1909	124	46,669	112,918	29,312,171	83,013,331	131,539,493	48,526,162
1914	117	58,128	135,898	43,860,606	138,549,938	205,270,622	66,720,684
1919	106	55,218	167,180	82,416,737	368,143,487	556,664,807	188,521,320
1921	118	48,033	(1)	70,944,834	211,938,355	340,536,225	128,597,870
1923	139	80,590	250,102	129,178,010	413,660,102	604,350,341	190,690,239
1925	141	50,393	243,934	77,246,992	266,053,504	390,771,210	124,717,706

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Establishments engaged primarily in the locomotive industry manufacture chiefly steam locomotives, but produce also a small number of electric and internal-combustion locomotives. Car manufactures include passenger, dining, sleeping, mail, baggage, express, and other cars for passenger traffic, and various types of

freight cars. Many new locomotives and cars are built by railway repair shops in addition to their great volume of repair work. The electrical-machinery industry produces large numbers of electric locomotives. Table 13 presents census data for establishments primarily engaged in the locomotive and car building industries (not including railway repair shops).

Both the value of products and the cost of materials of the railway-locomotive industry decreased about two-thirds between 1923 and 1925 and were smaller than in any census year since 1914. The value of products in the steam and electric railroad car industry decreased about one-third in comparison with the 1923 figures, but exceeded 1921 by $50,000,000. These great decreases in production were largely explained by the fact that the railroads were engaged in a comprehensive program for the replacement of equipment in 1923 which enabled them to make a substantial reduction in their purchases of rolling stock in the two following years.

Table 14.—Railway Locomotives: Production, Orders, and Unfilled Orders

NOTE.—"Production" includes output of Canadian locomotive builders from 1905 to 1911, inclusive, and equipment built in the railroads' own shops from 1912 to 1923, inclusive.

Yearly average or year	Orders				Production			Unfilled orders [1]		
	Total	Domestic service	Canadian service [2]	Other foreign service	Total	Domestic and Canadian service	Foreign service [3]	Total	Domestic service	Foreign service
1901–1905		4,218	([4])		4,308	([5])	([5])			
1906–1910		3,489	([4])		4,860	4,344	516			
1911–1915		2,742	([4])		3,619	3,064	556			
1916–1920	4,218	2,175	([4])	2,043	4,588	2,629	1,959			
1921–1925	1,732	1,450	53	229	2,095	1,759	333	772	698	74
1913		3,467	([4])		5,332	4,561	771			
1918	4,888	2,593	209	2,086	6,475	3,668	2,807			
1919	1,170	214	58	898	3,272	2,162	1,110			
1920	2,905	1,998	189	718	3,672	2,022	1,650	1,447	1,016	431
1921	820	239	35	546	1,823	1,185	638	367	263	104
1922	2,799	2,600	68	131	1,534	1,303	231	892	826	66
1923	2,142	1,944	82	116	3,785	3,505	280	1,636	1,573	63
1924	1,626	1,413	71	142	2,036	1,810	226	499	447	52
1925	1,274	1,055	10	209	1,285	994	291	467	381	86
1926	1,542	1,301	61	180	1,770	1,585	185	583	499	84
1927	846	734	58	54	1,176	1,009	167	331	293	38

[1] Monthly averages.
[2] Placed by Canadian roads with Canadian production plants.
[3] Other than Canadian, which is included in production for domestic service.
[4] Canadian orders included under "Domestic."
[5] Data not available.

Sources: Orders and production from Railway Age; unfilled orders from Department of Commerce, Survey of Current Business.

Railway Locomotives.

The total number of locomotives built in the United States in 1927, according to the Railway Age, was 1,176, a decrease of 594 as compared with the preceding year. (Table 14.) Production of locomotives for foreign service also fell slightly below the 1926

figure. Locomotive construction for domestic and Canadian use declined 36 per cent in 1927 as compared with 1926, but there was a slight increase over the output of 1925. Unfilled orders at the close of 1927 were less by 43 per cent than at the end of 1926, totaling 331, of which 293 were for domestic service and 38 for foreign orders. Locomotives installed on railways in the United States in 1927 totaled 1,955 and those retired 3,572, leaving 60,845 in active service. The number of locomotives in service has been declining for several years, but this is partly a result of the larger average tractive power of the replacements. (See section on Transportation and Communication.)

During 1927 there were 228 steam locomotives, valued at $5,327,000, exported from the United States, compared with 271, valued at $5,113,000, exported in 1926. The largest purchases were made by Canada and Brazil.

Freight Cars.

The number of freight cars ordered for steam railways in 1927 totaled 74,785 (Table 15), an increase of 6 per cent over the total ordered in 1926. During the greater part of the year the freight-car market was stagnant. Over one-half of the total orders for the year was placed in January and December. Canadian orders were 43 per cent greater in 1927 than in 1926 and over three times as great as in 1925. Production declined 30 per cent in 1927, and the total number of freight cars in service was reduced from 2,379,000 to 2,316,000.

Table 15.—Steam Railway Passenger and Freight Cars Ordered and Built

Year	Orders				Production		
	Total	United States domestic	Canadian plants	United States for export	Total [1]	On domestic orders	On foreign orders
Passenger cars:							
1915		1,978		[2]	1,866	1,852	14
1917	1,167	1,124		43	1,955	1,924	31
1918	57	9	22	26	1,572	1,480	92
1919	782	292	347	143	391	306	85
1920	2,094	1,781	275	38	1,440	1,272	168
1921	492	246	91	155	1,314	1,275	39
1922	2,488	2,382	87	19	820	676	144
1923	2,483	2,214	263	6	1,536	1,507	29
1924	2,679	2,554	100	25	2,213	2,150	63
1925	2,317	2,191	50	76	2,413	2,363	50
1926	2,162	1,868	236	58	2,286	2,184	102
1927	1,803	1,612	143	48	1,835	1,785	50
Freight cars:							
1915	128,014	109,792	[3]	18,222	70,142	58,226	11,916
1917	132,558	79,367	[3]	53,191	139,643	115,705	23,938
1918	177,317	114,113	9,657	53,547	108,044	67,063	40,981
1919	29,893	22,062	3,837	3,994	156,764	94,981	61,783
1920	105,669	84,207	12,406	9,056	75,435	60,955	14,480
1921	28,358	23,346	30	4,982	46,704	40,292	6,412
1922	181,972	180,154	746	1,072	67,415	66,289	1,126
1923	103,552	94,471	8,685	396	178,166	175,748	2,418
1924	149,612	143,728	1,867	4,017	114,902	113,761	1,141
1925	95,596	92,816	642	2,138	108,945	105,935	3,010
1926	70,495	67,029	1,495	1,971	91,633	88,862	2,771
1927	74,785	72,006	2,133	646	64,477	63,390	1,087

[1] Figures do not include Canadian production.
[2] Data not available.
[3] Canadian orders included under "Domestic."
Source: Railway Age.

Exports of freight cars in 1927 decreased to 2,723, valued at $2,539,000, compared with 4,403, valued at $3,904,000 in 1926. The principal countries to which freight cars were shipped during 1927 were Cuba, Colombia, and Canada.

Passenger Cars.

Orders for railway passenger cars totaled 1,803 in 1927, which was 17 per cent less than in 1926 and 33 per cent less than the record total of 1924. Of this number, 1,612 were for American and 143 for Canadian use, representing a decrease in both. Orders for passenger cars were irregular throughout the year.

Exports of passenger cars for steam railways totaled 216, valued at $1,605,000 in 1927, being slightly smaller than in the preceding year. During 1927 there were exported 91 passenger cars for use on electric railways, valued at $632,000, compared with 89, valued at $674,000 in 1926.

ELECTRICAL EQUIPMENT AND MATERIALS

SUMMARY.—Production of electrical equipment and materials, which had shown a rapid expansion in the years from 1921 to 1926, decreased about 8 per cent in 1927 as compared with the preceding year. There were no appreciable price changes during 1927. Exports of electrical equipment increased slightly and were larger than in any of the previous five years. All of the principal classes of equipment, except telephone apparatus, were exported in larger quantities than in 1926.

Production.

The only complete statistics of electrical machinery production are those of the biennial censuses, the last of which now available relates to 1925. For manufacturers whose principal product was electrical machinery the value of output in 1925 was $1,540,000,000 (Table 16), an increase of 54 per cent over 1919. The increase in quantity was larger than that in value because prices decreased between the two dates.

Table 16.—The Electrical Machinery, Apparatus, and Supplies Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899	581	42,013	40,682	$20,579,194	$49,458,272	$92,434,435	$42,976,163
1904	784	60,466	102,493	31,841,521	66,836,926	140,809,369	73,972,443
1909	1,009	87,256	157,809	49,381,145	108,566,404	221,308,563	112,742,159
1914	1,030	118,078	226,320	73,806,329	154,728,076	335,170,194	180,442,118
1919	1,404	212,374	438,082	238,188,852	425,098,211	997,968,119	572,869,908
1921	1,333	161,204	(1)	194,242,357	344,069,963	833,985,443	489,915,480
1923	1,671	234,892	480,268	305,455,263	548,626,673	1,293,001,771	744,375,098
1925	1,739	239,921	589,398	323,834,541	636,692,076	1,540,002,041	903,309,965

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

In Table 17 is shown the value of each of the principal classes of apparatus manufactured in the last three census years. The totals given differ from the total value of the products of the electrical industry shown in Table 16, because they include electrical products made by establishments engaged primarily in the manufacture of other articles and classified under other industries. Marked increases were shown for 1925, as compared with 1923, in the value of output of practically every class of equipment. The exceptions were a sharp decline in the production of material for overhead trolley lines and slight decreases in output of telephone apparatus, electric signals, motor-control apparatus, and wiring devices. While the rate of track extension of electric railways continued to increase at the same rate as in 1923, a very sharp decline in the amount of rebuilt track was recorded. This can be partly explained by the low replacement rate during 1917 to 1921, which caused replacements to reach a peak in 1923. The decrease in the amount of telephone apparatus resulted from the same cause; that is, the period of making up for deferred replacements which has now passed.

Table 17.—Value of Electrical Machinery, Apparatus, and Supplies Manufactured

NOTE.—Includes products made by establishments in other industries.

[In thousands of dollars]

Article	1921	1923	1925
Total	**$809,590**	**$1,278,700**	**$1,549,018**
Generating apparatus	58,861	99,072	101,921
Transformers and synchronous converters	42,103	59,115	62,153
Motor-generator sets and dynamotors	6,311	7,305	8,264
Motors	74,447	109,189	113,110
Fans, electric	8,611	12,054	12,563
Control apparatus	19,551	33,177	31,303
Electric locomotives	9,397	8,865	10,331
Storage batteries, parts, and supplies	48,558	92,843	110,212
Primary batteries, parts, and supplies	18,325	25,222	45,036
Carbons	5,528	14,746	13,955
Searchlights, etc	1,943	2,479	2,801
Incandescent lamps	59,728	71,966	73,558
Radio apparatus:			
Radio tubes	1,098	9,824	21,171
Other radio apparatus	9,550	44,176	155,820
Rectifying apparatus	956	4,251	10,466
Telegraph apparatus	[1]	2,086	2,922
Fire-alarm apparatus	2,404	2,640	3,490
Telephone apparatus	101,992	92,398	81,510
Industrial apparatus, not including motor-driven tools and devices	3,822	6,788	10,283
Household appliances	37,671	63,915	75,102
Electric measuring instruments	21,033	28,221	31,650
Magneto ignition apparatus	[2] 20,589	[2] 31,831	41,854
Switchboards, etc	36,299	57,856	69,759
Railway signaling apparatus	[1] 1,620	[1] 4,466	14,030
Fuses	4,483	9,245	10,393
Insulators	[3] 6,509	[3] 16,374	[3] 17,858
Wiring devices	21,806	34,966	34,806
Lightning arresters, etc	2,044	3,834	5,961
Insulated wire and cable	98,333	184,472	210,617
Overhead-trolley-line material	2,691	8,796	4,240
Conduits	[2] 19,346	[2] 37,500	46,330
Electric signals	6,444	7,142	5,081
Electrotherapeutic apparatus	6,820	5,991	9,788
All other electrical items	50,472	85,894	100,679

[1] No comparable data.
[2] Figures for 1921 and 1923 not strictly comparable with those for 1925.
[3] In addition, porcelain electrical supplies to the value of $25,689,892 in 1921, $21,248,382 in 1923, and $21,826,971 in 1925 were made by establishments engaged primarily in the manufacture of pottery.

Source: Bureau of the Census.

The most important increase in production of electrical equipment, according to the census of 1925, was shown by radio apparatus, the output of which was over three times as great as in 1923. Production of rectifying apparatus and railway signaling apparatus more than doubled, and there were also very pronounced increases in the value of output of both primary and storage batteries, fire-alarm apparatus, lightning arresters, and electrotherapeutic apparatus. Production of electric household appliances reached a total value of $75,000,000, an increase of 18 per cent as compared with 1923.

Business in 1927.

The electrical manufacturing industry in 1927 was fairly active; production had an estimated value of about $1,660,000,000, which was about 8 per cent smaller than in 1926, but larger than in 1925 and other recent years. As usual, value of production was largest during the last quarter of the year. Addition to existing generating plants and new construction totaled 3,727,000 kilovolt amperes. Most manufacturers experienced a profitable year. The widespread application of power supply to the operation of receiving sets and the introduction of the alternating-current set were the outstanding developments in radio manufacturing during 1927.

The sale of clocks operated from central station supply continued to increase, as did small cookers, dishwashers, floor polishers, and ironing machines. Refrigerator sales increased about one-half as compared with 1926.

Price Movement.

Because of the large number of products of the electrical machinery industry and the variations in sizes, styles, and character of those even of a given designation, it is difficult to summarize the price trend as a whole. As nearly as can be determined, however, there was no marked price change during 1927, although there were indications of decreases in a number of lines.

Exports by Articles.

Exports during 1927 showed an increase over 1926, a rise that has been continuing since 1922, although the increase during 1927 was very slight. The value of electrical machinery and supplies exported was $84,610,000, which was about one-half of 1 per cent more than in 1926. Exports were about three times as large as in 1913, and probably exceeded in quantity the peak shipments of 1919 and 1920. The total as shown in Table 18 does not, however, include such items as wire, insulators, and electric washing machines. The addition of these items would bring the total up to $101,570,000 for 1927, 4 per cent more than in the previous year. Even this total does not include electrical equipment on machine tools or automobiles.

Exports of generators and accessories increased 10 per cent. Motors under 1 horsepower and motor-driven household appliances

also had large increases amounting to 31 per cent and 33 per cent, respectively. Exports of primary batteries showed an increase of 27 per cent, while exports of secondary batteries increased 7 per cent. Radio apparatus increased about 4 per cent over 1926. There were declines in the shipments of telephone apparatus, large motors, large switching equipment, and transformers.

Table 18.—Exports of Electrical Machinery and Appliances, by Articles

[Value in thousands of dollars]

Item	1922	1923	1924	1925	1926	1927
Total	53,147	59,927	69,828	73,790	84,226	84,610
Generators and accessories	4,265	3,978	4,588	5,365	5,208	5,748
Self-contained lighting units	442	610	780	1,076	1,151	1,340
Primary batteries	1,083	1,273	1,711	2,416	3,695	4,679
Storage batteries	1,474	2,344	2,883	2,683	3,443	3,673
Transformers	4,906	3,956	5,654	3,491	3,497	2,607
Converting apparatus	1,367	999	1,157	967	1,557	1,729
Switchboard panels	2,702	1,668	2,163	2,305	2,193	1,628
Switches and circuit breakers	1,892	1,796	2,245	2,424	2,618	1,987
Fuses and fuse blocks	199	311	282	343	352	370
Meters and testing apparatus	1,441	1,546	1,991	2,143	2,645	2,558
Protective devices	678	616	920	707	709	726
Motors under one horsepower	772	1,728	1,687	2,102	2,000	2,614
Larger motors	3,535	4,792	4,296	3,884	5,218	4,385
Accessories and parts for motors	1,138	1,659	1,998	2,040	2,730	3,374
Starting and controlling equipment	920	1,752	1,536	1,437	1,598	1,399
Electric locomotives	1,078	3,314	2,243	812	2,601	1,321
Electric fans	816	859	1,028	917	948	1,005
Incandescent lamps	1,225	1,131	1,070	1,250	1,603	1,538
Other lamps	268	296	365	244	281	440
Flash lights	254	494	776	1,342	2,058	2,474
Searchlights and projectors	280	366	381	562	574	874
Motor-driven household appliances	642	866	888	1,206	1,744	2,312
Domestic heating and cooking devices	597	984	1,104	1,340	1,722	1,558
Industrial ovens and furnaces	238	214	240	252	253	532
Therapeutic apparatus	586	871	1,058	1,415	1,478	1,660
Radio apparatus	2,898	3,448	6,031	9,904	8,794	9,182
Telegraph apparatus	316	690	516	497	1,018	1,037
Telephone apparatus	4,391	1,125	3,983	3,719	5,124	3,804
Railway signals, etc	685	734	964	803	505	775
Bells, buzzers, etc	64	107	149	171	296	319
Ignition apparatus	1,093	1,695	1,911	2,708	1,904	2,007
Insulating materials	889	1,436	1,536	1,545	1,380	1,361
Wiring supplies	2,126	3,447	3,756	4,838	5,906	6,101
Other apparatus, n. e. s	7,887	8,822	7,938	6,883	7,423	7,491

Source: Bureau of Foreign and Domestic Commerce.

Destination of Exports.

The North American countries are the most important export markets for electrical machinery. Canada is the largest single purchaser and exports to that country increased 14 per cent during 1927. Exports to Mexico and Cuba decreased. (Table 19.) Exports to South America as a whole continued to increase and in 1927 amounted to $17,827,000. The principal South American markets are Brazil, Argentina, and Chile. Exports to Chile were only about one-half as large as in 1926 owing chiefly to the decrease in heavy machinery shipments.

Our exports to Europe during 1927 increased about 22 per cent over 1926. The United Kingdom continued to be the largest purchaser in Europe, taking more than three times the amount which we sent to Spain, our second best European market. Shipments to

Spain increased about 16 per cent in 1927. Our exports to France, Belgium, and Germany were larger than in 1926, and the shipments to Soviet Russia. Exports to Asia and Oceania declined 20 per cent and 11 per cent, respectively, but shipments to Africa were 10 per cent above those of 1926.

Table 19.—Exports of Electrical Machinery and Appliances, by Countries of Destination [1]

[Value in thousands of dollars. Total in 1913, $27,046,000, and in 1919, $89,926,000]

Country	1923	1924	1925	1926	1927
Total	**59,927**	**69,828**	**73,790**	**84,226**	**84,610**
Europe	11,505	11,393	12,805	11,399	13,884
Belgium	455	656	630	541	658
France	2,808	2,248	1,370	841	1,026
Germany	100	248	365	457	811
Italy	273	692	701	678	681
Netherlands	378	548	500	529	631
Soviet Russia	31	60	433	542	1,069
Spain	1,740	1,506	2,148	1,347	1,558
United Kingdom	4,252	4,182	5,391	4,938	5,612
All other	1,465	1,253	1,266	1,526	1,838
North America	18,576	24,799	26,040	26,228	28,395
Canada	10,967	13,014	14,363	15,976	18,270
Mexico	2,871	5,467	4,364	4,413	4,320
Cuba	2,917	4,086	4,796	3,292	3,112
All other	1,821	2,232	2,516	2,546	2,693
South America	10,331	9,209	11,981	17,741	17,827
Argentina	3,127	2,543	3,768	4,676	6,428
Brazil	1,790	2,915	4,001	4,292	4,601
Chile	3,687	1,730	1,750	5,066	2,531
Colombia	523	570	685	1,148	1,513
Peru	419	627	575	699	792
Venezuela	242	317	556	966	1,024
All other	542	508	646	894	938
Asia	12,542	16,312	15,085	17,235	13,760
British India	1,640	1,011	1,650	2,144	1,917
China	1,286	856	868	1,096	1,135
Japan, including Chosen	8,289	12,013	10,127	10,719	6,525
Philippine Islands	591	1,427	1,084	1,231	1,526
All other	736	1,004	1,356	2,046	2,657
Oceania	5,843	6,545	6,602	9,891	8,832
Australia	4,543	5,237	5,104	7,603	6,842
New Zealand	1,269	1,272	1,452	2,203	1,935
All other	31	36	47	84	55
Africa	1,131	1,569	1,276	1,733	1,911
British South Africa	972	1,396	1,092	1,409	1,558
All other	159	173	185	324	353

[1] See text for exports of such items as high-tension insulators, wire, etc., which are not included in this table.

Source: Bureau of Foreign and Domestic Commerce.

AGRICULTURAL MACHINERY AND EQUIPMENT

Scope of the Industry.

The most important articles produced by the agricultural machinery and equipment industry are those which are generally referred to as farm implements—plows, cultivators, harrows, seeders, planters, hay-rakes, mowers, reapers, binders, threshers, harvesters, and other machines with more specialized functions. Tractors are assuming an increasingly important place in the output of many implement manufacturers. Other items also coming within the scope of the industry

are dairy and poultry farm wagons, equipment, windmills, farm engines, pumps for farm use, spraying apparatus, and barn equipment. The United States holds first rank among countries in the production and utilization of agricultural implements.

Census Statistics.

Census figures given in Table 20 are for the agricultural-implement industry proper and do not include implements manufactured by concerns whose chief product is something other than this type of equipment, nor do they include concerns engaged chiefly in making wagons or tractors. The number of establishments has been constantly decreasing, and the number of wage earners has also shown a downward tendency. In 1925 the number of wage earners in the implement industry was 41 per cent less than in 1914, 47 per cent less than in 1919, and slightly less than in 1923. Both the total value of agricultural implements produced and the value added by manufacture were larger in 1925 than in any other census year except 1919.

Table 20.—Agricultural-Implement Industry [1]

Year	Establishments [1]	Wage earners (average number)	Horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899	715	46, 582	70, 646	$22, 450, 880	$43, 944, 628	$101, 207, 428	$57, 262, 800
1909	640	50, 551	100, 601	28, 608, 615	60, 306, 519	146, 329, 268	86, 022, 749
1914	601	48, 459	121, 256	34, 593, 325	73, 508, 645	164, 086, 835	90, 578, 190
1919	521	54, 368	128, 249	66, 704, 434	144, 571, 943	304, 961, 265	160, 389, 322
1921	353	30, 359	[2]	39, 835, 414	87, 267, 274	163, 816, 679	76, 549, 405
1923	312	30, 962	121, 975	40, 510, 534	63, 491, 886	151, 286, 248	87, 794, 362
1925	303	28, 696	115, 325	37, 387, 620	73, 850, 060	169, 467, 966	95, 617, 906

[1] Includes only those establishments whose products of chief value are agricultural implements. The decrease in the number of establishments is due in some measure to consolidations, but also to changes in classification.

[2] Not called for in schedule for 1921.

Source: Bureau of the Census.

Production by Classes.

The value of agricultural equipment produced in recent years is shown in Table 21. This table is more comprehensive than Table 20, in that it covers the output of farm wagons and tractors and includes also implements made by concerns primarily engaged in other industries. The figures for 1927 are preliminary but represent practically complete returns. The total value of agricultural equipment produced in 1927 was $456,234,000, which was 1 per cent less than the production in 1926. With the exception of the year 1926, production in 1927 was considerably greater than in any year since 1920.

Production of harvesting machinery increased in value 24 per cent during 1927, while production of haying machinery, tractors, barn and barnyard equipment showed increases of 10 per cent, 7 per cent, and 5 per cent, respectively; the value of the output of all other important groups of farm equipment was smaller than in 1926.

Table 21.—Value of Production of Agricultural Machinery, Tractors, and Farm Vehicles, by Principal Groups

[In thousands of dollars]

Item	1922	1923	1924	1925	1926	1927
Grand total	$209,640	$364,854	$323,367	$391,812	$461,400	$459,574
Farm tractors	52,314	92,085	82,498	121,050	145,913	159,530
Total, other machinery, etc.	157,326	272,769	240,869	270,762	315,487	300,044
Plows and listers	9,680	24,252	21,030	23,937	33,148	29,443
Harrows, rollers, pulverizers, and stalk cutters	4,734	11,532	9,717	10,179	15,553	13,868
Planting and fertilizing machinery	7,003	14,154	14,610	20,890	26,591	24,524
Cultivators and weeders	4,205	13,238	14,648	17,671	20,311	14,296
Harvesting machinery	11,822	26,278	29,752	28,386	46,007	57,230
Haying machinery	7,625	15,503	15,767	15,457	13,951	15,317
Machines for preparing crops for market or use	18,969	31,519	24,190	28,488	34,127	32,166
Horse-drawn vehicles	11,953	24,553	15,537	17,488	13,658	8,284
Barn and barnyard equipment	4,536	9,910	6,440	8,970	8,692	9,155
All other farm equipment	76,799	101,830	89,178	99,296	103,449	95,761

Source: Bureau of the Census.

Table 22.—Production of Agricultural Implements (Number)

Class	1923	1924	1925	1926	1927
Plows:					
Moldboard	668,126	537,595	541,393	630,189	525,046
Disk	19,299	12,874	20,424	24,250	21,425
Listers	42,989	41,030	38,826	56,087	35,690
Harrows	481,822	378,229	408,705	579,577	507,345
Corn planters:					
Hand	43,271	23,710	29,486	18,674	17,519
1 and 2 row	63,006	58,843	59,830	72,242	55,927
Cotton planters, 1-row	20,825	24,536	32,139	23,697	16,566
Combined corn and cotton planters:					
1-row	34,791	50,919	52,140	65,235	35,973
2-row	8,953	5,830	10,787	9,013	4,893
Grain drills, horse and tractor	30,572	15,579	32,582	47,113	58,629
Broadcast seeders	78,438	75,480	78,552	77,439	78,512
Cultivators	553,567	491,620	611,840	613,331	483,494
Grain binders	62,764	55,731	42,405	79,155	71,091
Combined harvesters and threshers	4,012	5,828	5,131	11,760	18,307
Corn binders	15,719	17,267	20,829	26,449	21,423
Potato diggers:					
Elevator type	10,099	7,438	4,594	7,036	12,139
Plow type	2,525	2,840	2,027	3,098	3,641
Mowers	130,374	126,448	112,299	112,259	110,644
Rakes, hay	80,647	77,542	87,616	72,537	86,489
Loaders, hay	23,340	13,484	15,746	19,793	25,102
Threshers	13,957	10,929	14,923	17,830	16,701
Ensilage cutters (silo fillers)	12,846	10,582	8,771	8,857	9,247
Fodder cutters		3,626	5,841	5,945	6,033
Corn shellers	45,771	38,967	43,386	44,713	47,396
Feed grinders and crushers	99,425	93,207	98,051	108,752	104,755
Farm tractors [1]	136,584	120,643	167,553	181,995	200,504
Farm wagons, 1 and 2 horse	147,039	84,852	108,477	74,693	44,302
Cream separators	162,169	143,977	170,505	194,270	191,996
Milking-machine units	11,243	12,274	15,004	17,653	16,451
Fertilizer distributors (horse)	38,398	50,730	68,058	84,407	53,427
Internal-combustion engines, farm use	163,910	120,458	182,415	177,247	131,814
Manure spreaders	36,548	35,842	53,839	67,322	67,541
Incubators	256,166	206,796	161,360	160,753	[2] 152,341
Brooders	217,365	149,669	135,578	207,009	426,495
Water pumps, hand and windmill	968,083	729,479	898,532	705,015	647,889
Silos	7,755	7,352	5,779	5,736	5,807
Water-supply systems	21,797	58,390	103,777	100,236	98,596
Windmills	76,335	77,393	100,439	84,949	79,213
Spraying outfits	203,617	152,988	257,690	257,818	222,240

[1] Includes motor cultivators and garden tractors.
[2] Not including incubators to the value of $5,308,982, as follows: Incubators [reported by section or by egg capacity and large commercial incubators.
[3] Not including brooders combined with incubators made by the same manufacturers and not reported separately.

Source: Bureau of the Census.

Table 22 shows the number of implements produced by principal types in each of the last five years. It includes both the products of establishments classed under the agricultural-implement industry and those made as secondary products by other establishments. Decreases in production were about twice as numerous as increases between 1926 and 1927 for the items shown. The number of plows, listers, corn and cotton planters, cultivators, farm wagons, fertilizer distributors, and internal-combustion engines produced in 1927 was substantially smaller than in the preceding year, while the output of combined harvesters and threshers, potato diggers, and brooders was considerably increased.

Price Movement and Market Conditions.

The past three years have witnessed no price changes of any importance in the implement industry. There have been, of course, some slight fluctuations and in most cases these have been downward. In general, these changes which have occurred resulted from improved manufacturing methods or increased production. Several of the leading tractor manufacturers have brought out new models during the year and this has resulted in some price changes, but of course the prices of new models are not strictly comparable with tractor prices for previous years. The agricultural-implement industry includes such a wide variety of products, each of which has many different types, that it is difficult to present a comprehensive discussion of price trends; however, during the past year prices have been practically stationary.

Domestic conditions in the implement industry during 1927 were the reverse of those in 1926. The year started off rather slowly, but business gradually picked up and, despite some setbacks, the industry enjoyed slightly more prosperity than in 1926. Most of the large firms report that 1927 business exceeded that for 1926. This, however, does not apply to firms which obtain a large proportion of their business in the South, as the Mississippi floods had a very unfavorable effect on sales of agricultural implements. One of the important factors tending to increase sales throughout the year was the increased demand for power farming equipment. On the whole it appears that the average increase in business in the implement industry was quite small and that the larger increases were enjoyed by firms manufacturing tractors and equipment to be used with tractors. There were no changes of any importance in the costs of raw material.

FOREIGN TRADE

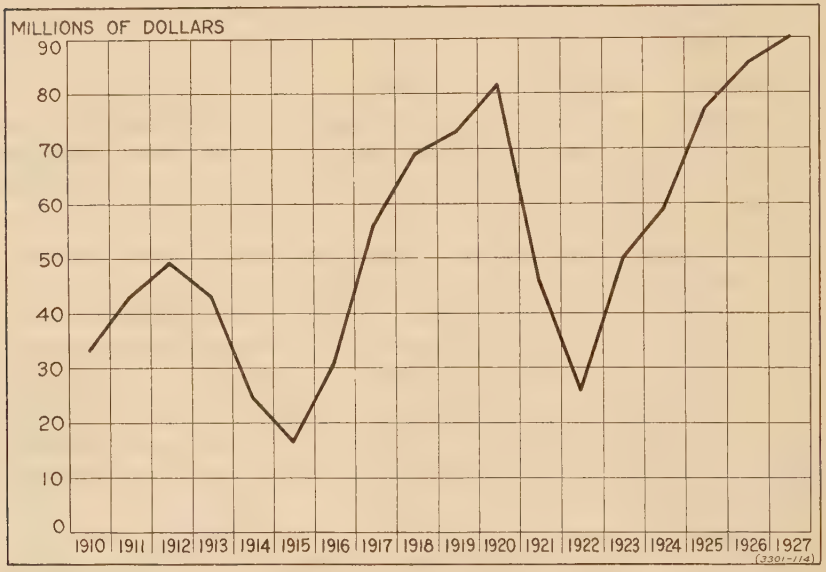
Exports.

Exports of agricultural implements from the United States, which represent about one-fifth of the total production, attained a new high record during 1927, when the total shipments for the year

reached $90,747,000. This amount was 6 per cent greater than the 1926 value, despite the fact that the total for 1926 had never before been reached. Shipments have steadily increased during the past five years and the total for 1927 was more than three times that of 1922.

Exports of implements were somewhat higher during the latter half of the year than during the first half, but trade was well sustained

Chart IV.—VALUE OF TOTAL EXPORTS OF AGRICULTURAL MACHINERY



throughout the year. The fluctuation of implement exports since 1910 is shown by calendar years in Chart IV and in the following table:

Year	Value	Year	Value	Year	Value
1910	$32, 971, 912	1916	$30, 315, 735	1922	$26, 059, 582
1911	42, 995, 039	1917	56, 209, 700	1923	50, 373, 104
1912	49, 249, 041	1918	69, 196, 030	1924	59, 648, 746
1913	42, 990, 763	1919	72, 929, 027	1925	77, 353, 862
1914	24, 733, 194	1920	81, 422, 090	1926	85, 499, 332
1915	16, 718, 923	1921	46, 126, 964	1927	90, 746, 926

Table 23 shows the value of exports of agricultural implements by classes. Most of the gain in the total value was due to larger exports of tractors, which have shown a consistent growth since 1922. Exports of combines (reaper-threshers) have shown a marked increase since 1925, when this item was first classified separately; shipments in 1927 were five times as great as in 1925. Exports of most other agricultural implements were somewhat lower in value than in 1926; the most important decreases were shown by planters, mowers, harvesters and binders, and dairy equipment.

Table 23.—Value of Exports of Agricultural Implements, by Classes

[In thousands of dollars]

Class	1922	1923	1924	1925	1926	1927
Total	**26,060**	**50,373**	**59,649**	**77,354**	**85,499**	**90,747**
Dairy equipment	778	1,347	1,259	1,842	2,128	1,771
Plows	1,538	3,998	5,283	7,636	5,542	5,321
Harrows	272	660	863	1,561	1,440	1,484
Planters	64	130	314	642	551	164
Drills and seeders	296	852	1,162	1,811	1,571	1,955
Mowers	983	2,156	3,378	2,367	1,211	883
Lawn, hand, and power mowers	438	[1]	[1]	746	875	727
Hay rakes and tedders	130	256	415	691	274	204
Harvesters and binders	2,063	3,911	7,639	5,339	7,874	4,640
Combines (reaper-threshers)				1,028	3,165	5,476
Threshers	2,601	6,814	5,515	3,503	5,156	4,644
Wheel tractors	5,089	11,213	13,178	26,142	28,282	34,540
Tracklaying tractors	799	1,489	1,492	1,838	2,204	3,211
Parts of garden and farm tractors	1,705	2,099	3,202	4,615	5,614	7,443
Windmills and parts	804	1,364	1,587	2,127	1,850	2,320
All other and parts	8,499	14,084	14,362	15,466	17,764	15,964

[1] Included with mowers.

Source: Bureau of Foreign and Domestic Commerce.

Tractor exports have increased steadily during the past six years and they now constitute by far the largest item of farm equipment exported from the United States. Exports of tractors and parts in 1927 amounted to approximately $45,000,000, or one-half of the total implement exports. The leading markets for American tractors in 1927 were Canada, Australia, Russia, Argentina, Germany, and Italy. Wheel tractors greatly predominate in the exports, although shipments of track-laying types have consistently increased in recent years. American tractors are used in practically all countries of the world, and are sold in large numbers in countries where the domestic production of tractors is of considerable importance, such as Germany, Italy, France, and the United Kingdom. The principal outlet for American tractors in 1927 was Canada, which practically doubled its purchases of wheel types during the year, while its purchases of track-laying types showed an even higher percentage of increase. The outstanding features of the exports in 1927, outside of the heavy Canadian purchases, were the large shipments of light-wheel tractors to Germany, and the decrease in sales to Russia, France, and Italy.

North America was the grand division which took the largest share of our exports of agricultural implements in 1927; its purchases amounted to $33,864,000, which was an increase of 32 per cent over 1926 and was the result of unprecedentedly large shipments to Canada. Europe, which occupied first place as an outlet for American implements in both 1926 and 1925, dropped to second place in 1927, largely as a result of decreased shipments to France and Italy. Shipments to Europe amounted to $21,501,000, or a decrease of about one-fifth as compared with 1926. Exports to South America were slightly

less than in 1926 and went largely to Argentina. Shipments to Asia, Oceania, and Africa were relatively small, but all three of these divisions made larger purchases than in 1926.

Table 24.—Value of Exports of Agricultural Implements, by Grand Divisions and Principal Countries of Destination

[In thousands of dollars]

Grand division and country	1913	1924	1925	1926	1927
Total	**42,991**	**59,649**	**77,354**	**85,499**	**90,747**
Europe	20,237	17,887	24,835	26,573	21,501
France	4,146	7,227	5,649	7,076	2,949
Italy	426	1,376	4,058	4,282	2,477
Russia in Europe	6,879	628	7,009	6,513	5,110
United Kingdom	1,208	1,953	2,459	2,567	2,420
All other	7,578	6,703	5,660	6,135	8,545
North America	10,511	11,110	17,906	25,664	33,864
Canada	9,618	7,498	14,161	21,842	30,440
Mexico	435	1,482	2,117	2,544	1,652
Cuba	316	1,499	878	660	981
All other	142	631	750	618	791
South America	8,018	19,935	22,177	20,371	19,537
Argentina	6,596	17,213	17,996	17,061	16,540
Brazil	366	694	1,051	440	413
All other	1,056	2,029	3,130	2,870	2,584
Asia	778	1,220	1,279	1,342	1,705
British India	15	207	325	251	342
Japan	21	259	182	[1] 237	[1] 259
Philippine Islands	108	182	197	270	343
Russia in Asia	473	242	109	86	53
Turkey in Asia	39	99	153	63	139
All other	122	231	312	435	569
Oceania	1,471	5,648	6,359	6,412	6,579
Australia	1,085	4,714	4,647	5,318	5,472
New Zealand	367	846	1,613	1,054	1,063
All other	19	88	99	40	44
Africa	1,976	3,848	4,798	5,137	7,561
British South Africa	1,650	2,308	2,715	2,545	3,138
Algeria and Tunisia	([2])	935	911	1,186	1,917
All other	326	605	1,171	1,406	2,506

[1] Includes Chosen. [2] Included in "All other."

Source: Bureau of Foreign and Domestic Commerce.

The three leading countries to which American implements were exported in 1927 were the same as in 1926, with the exception that Australia replaced France as the third largest buyer. Canada and Argentina again occupied first and second places, with purchases amounting to $30,440,000 and $16,540,000, respectively.

Sales of American implements in Canada have been showing consistent and rapid increases during the past three years, and Canadian purchases in 1927 were the largest ever reported, being approximately 40 per cent greater than in 1926 and one-third of our total implement exports. These exports to Canada were four times as great as in 1924. Exports to Argentina in 1927 were about $500,000 less than in 1926, but shipments to that country have been maintained on a fairly stable basis during the past three or four years. Purchases by Australia in 1927 were only about $150,000 greater

than in 1926, but that country rose to third place as an outlet for American implements. The growth of the Australian market for American implements is shown by the fact that its purchases in 1927 were five times as great as in 1913. Exports to France, which was the third largest buyer in 1926, decreased by more than one-half in 1927.

Imports.

Imports of agricultural implements into the United States increased nearly $400,000 in 1927, amounting to $5,407,000. Canada continued to be the chief source of imported implements. The amount of agricultural implements brought into the United States is so small in comparison with the total production of equipment in the country that it has little effect on our agricultural-implement industry.

ACTIVITIES OF PRINCIPAL COMPETING COUNTRIES

The dominant position of the United States in the world's implement markets was not radically affected by any of the changes that occurred during the past year. One of the outstanding factors was the continued increasing importance of the Canadian implement industry in the world export markets. The United States is one of the largest purchasers of Canadian implements, but they are also shipped to many other countries. Canadian agricultural machinery has been quite successful in France and is offering real competition to the United States implement trade in that country. The French implement industry itself maintained in a relatively strong position throughout the year; imports decreased considerably in 1927, indicating that the domestic industry is supplying a larger proportion of the demand. The situation of the German implement industry was not so favorable in 1927 as in 1926, imports increased and exports decreased. The British implement industry continued in an unfavorable position, owing to the depressed condition of agriculture and the increased importation of foreign agricultural machinery.

AUTOMOTIVE PRODUCTS

SUMMARY.—The most noteworthy development in the American automobile industry in 1927 was the exceptionally large growth of export business. As a result of the temporary withdrawal from production of one of the leading companies, production of passenger cars, trucks, and busses in the United States and Canada numbered 3,574,000 units, a decrease of slightly more than 20 per cent. The total value of all automotive products exported from the United States and Canada, except exports of parts from Canada, approximated $434,000,000, or an increase of 17 per cent over the preceding year. Foreign assemblies—that is, vehicles made in American branches abroad, from materials exported under the classification "parts for assembly"—numbered about 73,000 units. Other features of the year were the decrease in proportion of cars produced which were priced at less than $1,000, the increasing popularity of the closed car, and price reductions on practically all makes and models.

Tax-paid registrations of passenger cars and trucks in the United States numbered approximately 23,000,000, an increase of more than 5 per cent over the preceding year. It is estimated that approximately 1,883,000 automobiles were scrapped or otherwise retired from service during 1927.

Table 1. –Summary of Registration, Production, and Exports of Passenger Cars and Trucks and Busses

[In thousands]

Item	1914	1922	1923	1924	1925	1926	1927	Per cent increase, 1927 from 1926
United States registration	1,711	12,238	15,092	17,594	19,937	22,001	23,127	+5.1
Production in United States and Canada	569	2,639	4,167	3,736	4,427	4,503	3,574	−20.6
Passenger cars	544	2,385	3,761	3,321	3,900	3,974	3,086	−22.3
Motor trucks and busses	25	254	406	415	527	529	488	−7.8
Exports from United States:								
Passenger cars and motor trucks and busses	26	78	152	179	303	305	384	+25.9
Value of same	$28,507	$59,321	$106,009	$131,734	$222,589	$223,608	$277,875	+24.3
Value of parts	$5,664	$38,298	$58,975	$73,761	$80,311	$83,928	$99,346	+18.4

PASSENGER CARS AND MOTOR TRUCKS (INCLUDING BUSSES)

REGISTRATION AND PRODUCTION

Registration.

The number of passenger cars, trucks, and busses registered in the United States on December 31, 1927, was 23,127,315, an increase of 5 per cent over the total number for the previous year and more than 13 times the 1914 figure. At the end of 1927 approximately 74 per cent of the motor vehicles in the world were in the United States. The ratio of population to cars in the United States is now one car for every five inhabitants, which is higher than in any other country. The latest revised figures compiled by the Automotive Division of the

Bureau of Foreign and Domestic Commerce reveal that there are now registered throughout the world 25,104,000 passenger cars, 201,000 busses, 4,317,000 trucks, and 1,935,000 motor cycles (data for some small countries estimated), totaling 31,639,449 (including 81,798 motor vehicles for which separate figures as to classes were not available). Of this number the United States has 20,280,000 passenger cars, 86,000 busses, 2,897,000 trucks, and 120,000 motor cycles. In addition, there were in the United States 135,000 official motor cars and 4,000 official motor cycles which, owing to their exemption from taxation, were not included in the registration figures.

Table 2.—Motor-Vehicle Registration in the United States

[In thousands]

Year	Grand total	Passenger cars, taxis, and busses [1]	Trucks and commercial cars [2]	Motor cycles	Year	Grand total	Passenger cars, taxis, and busses [1]	Trucks and commercial cars [2]	Motor cycles
1906	48	[3]	[3]	[3]	1922	12,421	10,960	1,279	183
1910	523	[3]	[3]	[3]	1923	15,264	13,540	1,553	171
1915	2,645	2,373	73	199	1924	[4] 17,748	15,461	[4] 2,133	154
1916	3,764	3,394	119	251	1925	[4] 20,078	17,496	[4] 2,441	140
1917	5,241	4,792	191	258	1926	[4] 22,133	19,237	[4] 2,764	132
1918	6,387	5,853	294	241	1927	[4] 23,248	20,230	[4] 2,897	120
1919	7,807	7,144	422	241	Per cent change from 1926	+5.0	+5.2	+4.8	−9.1
1920	9,471	8,380	852	239					
1921	10,660	9,483	980	196					

[1] Classified as "automobiles" prior to 1921.
[2] Figures incomplete owing to classification, by some States, of trucks and commercial cars with other motor vehicles.
[3] Separate figures not available.
[4] Figures include road tractors, not previously reported.
Source: Bureau of Public Roads, Department of Agriculture.

Census Statistics of the Industry.

The automotive industry continues to be the nation's leading industry in value of product. The value of completed motor vehicles alone, according to the biennial census of 1925, was $3,198,123,000, an increase of 1.1 per cent over 1923. (Table 3.) This large figure does not include products of those establishments coming under the classification "motor-vehicle bodies and parts industry," a large part of which ultimately become materials of the motor-vehicle industry and are thus duplicated in the returns of value of products. The value of this class of products was $1,523,280,000, an increase of almost 50 per cent over 1923. It is particularly noteworthy that in the "motor-vehicles" classification the number of units in 1925 increased 7 per cent over 1923, yet the number of wage earners decreased almost 18 per cent. The number of wage earners in the "bodies and parts" classification increased approximately 40 per cent, but this was slightly less than the percentage increase in value of output. The gain in per capita production is largely a result of increased use and improved efficiency of machinery in the industry.

Table 3.—Census Statistics of Motor Vehicles and Motor-Vehicle Bodies and Parts Industries

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture	Number of motor vehicles made [2]
				Thousands of dollars				
THE TWO BRANCHES								
1904	178	12,049	9,966	7,159	13,151	30,034	16,882	----------
1909	743	75,721	74,253	48,694	131,646	249,202	117,556	----------
1914	1,271	127,092	172,875	101,927	356,208	632,831	276,624	----------
1919	2,830	343,115	539,093	491,121	1,940,679	3,080,074	1,139,395	----------
1921	2,359	212,777	(1)	318,753	1,321,027	2,079,404	758,377	----------
1923	2,471	404,886	860,633	659,877	2,711,571	4,176,440	1,464,870	----------
1925	1,655	426,110	1,172,013	713,931	2,970,913	4,721,403	1,750,489	----------
MOTOR VEHICLES								
1899	57	2,241	2,979	1,321	1,804	4,748	2,944	(1)
1904	121	10,239	7,517	6,179	11,658	26,645	14,987	(1)
1909	265	51,294	49,772	33,180	107,731	193,823	86,092	126,593
1914	300	79,307	104,963	66,934	292,598	503,230	210,633	568,781
1919	315	210,559	282,323	312,166	1,578,652	2,387,903	809,252	1,871,264
1921	385	143,658	(1)	221,974	1,107,062	1,671,387	564,325	1,591,839
1923	351	241,356	435,545	406,730	2,147,463	3,163,328	1,015,865	3,890,250
1925	297	197,728	509,758	341,210	2,108,192	3,198,123	1,089,931	4,165,074
MOTOR-VEHICLE BODIES AND PARTS								
1904	57	1,810	2,449	980	1,493	3,388	1,895	----------
1909	478	24,427	24,481	15,513	23,914	55,379	31,465	----------
1914	971	47,785	67,912	34,993	63,610	129,601	65,991	----------
1919	2,515	132,556	256,770	178,956	362,027	692,171	330,143	----------
1921	1,974	69,119	(1)	96,779	213,965	408,017	194,052	----------
1923	2,120	163,530	425,088	253,147	564,107	1,013,112	449,005	----------
1925	1,358	228,382	662,255	372,721	862,721	1,523,280	660,558	----------

[1] Not called for in schedule.
[2] Includes a small number made in motor vehicles bodies and parts industry and in other industries.
Source: Bureau of the Census.

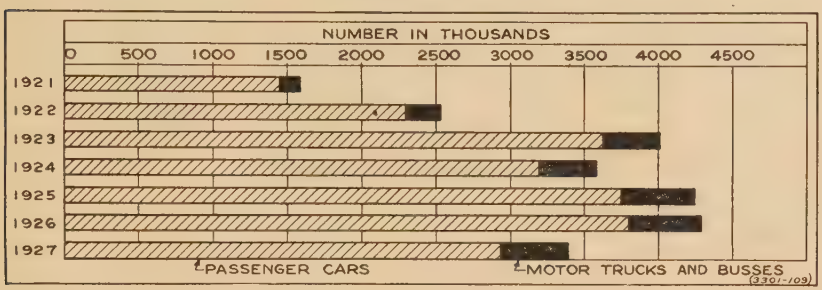
Table 4.—Census Statistics of United States Motor-Vehicle Production

Class	Number		Value (thousands of dollars)		Per cent increase [1]	
	1923	1925	1923	1925	Number	Value
Aggregate value	----------	----------	**3,163,749**	**3,198,852**	----------	**1.1**
Total motor vehicles	**3,890,250**	**4,165,074**	**2,611,735**	**2,946,821**	**7.1**	**12.8**
Passenger vehicles	3,472,686	3,653,725	2,278,231	2,523,805	5.2	10.8
Open, touring	1,782,992	1,095,186	962,097	516,206	−38.6	−46.3
Open roadsters and runabouts	432,152	390,062	221,899	180,845	−9.7	−18.5
Closed	1,201,577	2,080,697	1,066,838	1,786,834	73.2	67.5
Chassis	53,256	87,780	25,121	39,919	64.8	58.9
All other	2,709	----------	2,276	----------	----------	----------
Public conveyances (busses, cabs, etc.)	12,878	15,295	24,667	43,690	18.8	77.1
Government and municipal special vehicles	1,192	1,233	10,052	10,486	3.4	4.3
Business vehicles	403,494	494,821	298,785	368,840	22.6	23.4
Delivery wagons	28,042	35,976	17,139	24,080	28.3	40.5
Trucks	252,563	303,824	202,723	257,804	20.3	27.2
Hearses	872	2,011	2,557	5,359	130.6	109.6
Chassis	122,017	153,010	76,365	81,597	25.4	6.9
All other products, including bodies and parts	----------	----------	552,014	252,031	----------	54.3

[1] A minus sign denotes decrease.
Source: Bureau of the Census.

The average unit value, at the factory, of passenger cars produced in 1925 was about $690, as compared with $655 in 1923 and $762 in 1914. The increase in unit value in 1925 is accounted for by the

Chart I.—PRODUCTION OF PASSENGER CARS, AND TRUCKS AND BUSSES, UNITED STATES



increasing proportion of closed cars, while the decline which has taken place since 1914 has been due to a substantial reduction in automobile prices.

Detailed census statistics of motor-vehicle production in 1925 and 1923 are shown in Table 4.

Table 5.—Production and Exports of Motor Vehicles, United States and Canada

NOTE.—Figures include chassis as well as complete vehicles. There were in 1923, 1924, 1925, 1926, and 1927, foreign assemblies of American cars amounting to approximately 106,110, 131,745, 139,391, 99,348, and 73,265, respectively, which were exported as "parts" from the United States and Canada and are not included in the production or export figures. These oversea assemblies of American cars if added both to the production and to the export figures below would materially increase the percentage of production exported.

Year	Production							Exports, cars, trucks and busses, except electric		
	Total [1]			Passenger cars		Trucks and busses		Total	United States	Canada
	Both countries	United States	Canada	Both countries	United States	Both countries	United States			
1910	187,000	(2)	(2)	181,000	(2)	6,000	(2)	8,902	8,443	459
1913	485,000	(2)	(2)	461,500	(2)	23,500	(2)	32,886	26,889	5,997
1914	[3] 573,039	(2)	(2)	543,679	(2)	25,375	(2)	31,386	25,765	5,621
1915	892,618	(2)	(2)	818,618	(2)	74,000	(2)	77,433	63,958	13,475
1916	1,617,708	(2)	(2)	1,525,578	(2)	92,130	(2)	93,422	80,843	12,579
1917	1,868,949	(2)	(2)	1,740,792	(2)	128,157	(2)	89,727	80,235	9,492
1918	1,153,638	(2)	(2)	926,388	(2)	227,250	(2)	57,605	47,244	10,361
1919	1,974,016	1,886,181	87,835	1,657,652	1,577,716	316,364	308,465	105,679	82,730	22,949
1920	2,205,197	2,111,053	94,144	1,883,158	1,799,522	322,039	311,531	194,656	171,644	23,012
1921	1,661,550	1,595,304	66,246	1,514,000	1,452,902	147,550	142,402	49,156	38,430	10,726
1922	2,649,261	2,547,208	102,053	2,397,827	2,302,923	251,434	244,285	116,192	78,234	37,958
1923	4,166,693	4,020,255	146,438	3,760,956	3,631,728	405,737	388,527	221,814	151,894	69,920
1924	3,736,164	3,600,918	135,246	3,320,814	3,203,049	415,350	397,869	235,387	178,732	56,655
1925	4,427,093	4,265,704	161,389	3,899,770	3,760,459	527,323	505,245	377,082	302,931	74,151
1926	4,503,352	4,298,802	204,550	3,973,959	3,808,753	529,393	490,049	379,744	305,420	74,324
1927	3,573,714	3,394,288	179,426	3,086,061	2,939,061	487,653	455,097	441,613	384,199	57,414

[1] Total production of automobiles (approximate) for 1896 was 25; 1900, 5,000; 1905, 25,000. Separate figures for classes are not available.

[2] Prior to 1919 production figures for the United States and Canada were not reported separately.

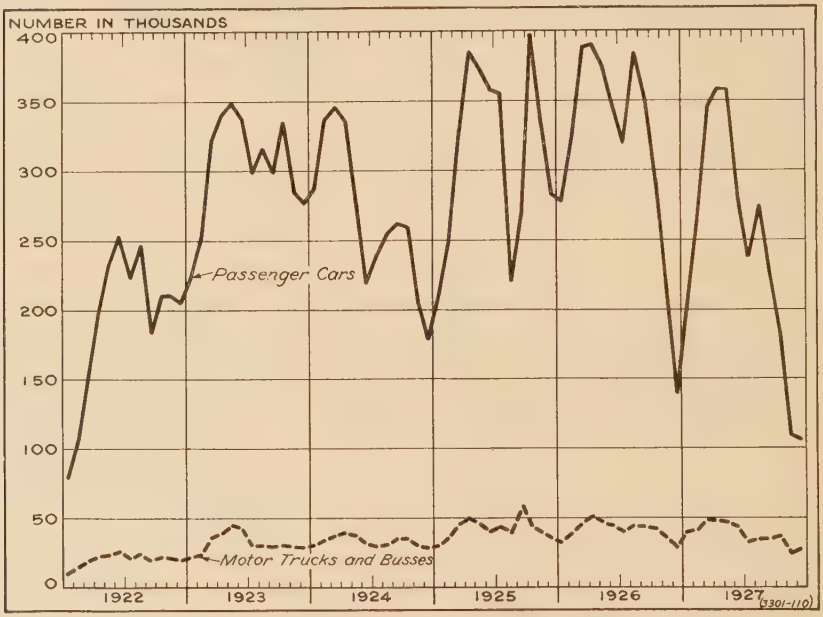
[3] Figure includes production not distributed by classes.

Sources: National Automobile Chamber of Commerce; Canadian Monthly Trade Returns; War Trade Board; Bureau of the Census and Bureau of Foreign and Domestic Commerce, Department of Commerce.

Production—United States and Canada.

As a result of the temporary suspension of operations by a leading manufacturer, production in the United States and Canada during 1927 declined to 3,574,000 from the record 1926 total of 4,503,000, a decrease of 21 per cent. Production was also much smaller than in 1925. Passenger-car output decreased 22 per cent and trucks and busses 7.9 per cent in 1927. Of the total number approximately 95 per cent were manufactured in the United States. In both 1926 and 1927 there were increases in the proportion of automobiles manu-

Chart II.—PRODUCTION OF PASSENGER CARS, AND TRUCKS AND BUSSES, UNITED STATES, BY MONTHS



factured in Canada. The ratio of passenger cars to trucks and busses decreased, being a little over 6 to 1 in 1927, as compared with 7 to 1 in 1926, 8 to 1 in 1925, 9 to 1 in 1924, and approximately 10 to 1 for the three preceding years. This is a result of the increased use of the motor bus in the United States and other countries and the increased exports of trucks.

The production and exports of motor vehicles from the United States and Canada are shown in Table 5 for all years since 1913.

Seasonal variations greatly affect the statistics of monthly production. October was the leading month during 1925 for passenger-car production; March and April were leading months in 1926; while in 1927 production was at a peak in April and May. It is worthy of note that the 1927 peak was considerably lower than in 1925 and

1926, and throughout the rest of the year the suspension of operations by one of the largest companies resulted in a marked curtailment of total production. Production is usually much curtailed in the last month of the year, and in 1927 the output in both November and December was smaller than in any month since January, 1922. Production of trucks and busses reached a peak in March, continued at a high rate throughout the spring, was sharply reduced in July, expanded slightly in the late summer and early fall, and was curtailed again in November. The output of trucks and busses in November was smaller than in any month since February, 1923, but there was a slight increase in activity during December.

Table 6.—Production of Motor Vehicles in United States and Canada

[Number of machines]

Month	Passenger cars									
	United States					Canada				
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
Total	**3,631,728**	**3,203,049**	**3,760,459**	**3,808,753**	**2,939,191**	**129,228**	**117,765**	**139,311**	**165,206**	**146,870**
January	222,635	287,417	210,887	277,831	199,650	9,341	9,841	8,301	11,781	11,745
February	253,271	336,094	248,237	325,122	264,171	10,910	12,072	10,779	14,761	14,826
March	322,459	345,900	327,968	387,570	345,911	13,742	15,194	13,014	17,989	19,723
April	338,704	336,814	384,229	389,833	357,009	14,331	14,448	15,515	17,929	20,890
May	348,603	276,755	373,349	375,317	357,150	16,705	15,291	18,351	21,429	21,991
June	336,751	219,798	358,640	343,708	278,729	13,299	10,757	14,249	18,818	16,470
July	298,742	241,322	354,777	319,688	236,868	10,475	8,619	11,140	12,953	8,719
August	315,589	254,019	221,594	382,651	274,381	8,742	5,436	7,430	12,778	10,139
September	299,154	261,875	267,196	352,202	226,443	8,272	6,588	10,372	13,347	8,681
October	334,413	259,836	397,332	292,562	183,042	7,964	6,357	13,921	10,595	6,236
November	284,905	204,173	333,176	222,419	109,758	7,602	5,962	8,741	6,774	5,173
December	276,502	179,046	283,074	139,850	106,079	7,845	7,200	7,498	6,052	2,277
	Motor trucks and busses									
Total	**388,527**	**397,869**	**505,245**	**490,049**	**455,097**	**17,210**	**17,481**	**22,078**	**39,344**	**32,556**
January	21,667	31,109	29,705	31,713	39,277	789	1,747	1,565	3,698	3,631
February	24,330	34,225	35,340	39,058	40,592	1,129	1,679	1,693	4,077	3,829
March	36,320	36,818	46,457	46,900	48,525	1,382	2,040	2,089	4,385	3,527
April	39,232	39,044	49,554	51,474	47,736	1,617	1,933	1,576	3,573	3,721
May	45,223	37,350	45,918	45,867	46,956	1,996	1,753	1,888	3,505	3,717
June	41,807	31,977	39,850	44,192	43,231	1,616	950	1,794	2,933	2,738
July	31,297	28,990	42,976	39,587	31,608	1,407	1,107	1,845	2,255	2,268
August	31,254	30,630	38,996	43,955	34,438	1,614	880	1,486	2,483	2,387
September	28,738	34,458	58,651	43,485	33,939	1,345	1,351	2,480	3,606	2,581
October	31,038	34,807	44,782	41,859	36,670	1,439	1,270	1,694	4,075	1,555
November	28,692	30,442	39,322	33,882	24,653	1,569	1,081	2,237	3,054	1,444
December	28,929	28,019	33,694	28,077	27,472	1,307	1,690	1,731	1,700	1,158

Source: Bureau of the Census.

The production of passenger cars selling for less than $1,000 showed a decrease of 29 per cent in 1927, largely as the result of the withdrawal from production of one large company. Production in each of the higher-price groups shown in Table 7 was also smaller than in either of the two immediately preceding years; the decline from 1926 was most pronounced in the case of the cars priced from $2,000 to

$3,000. As a result of the great improvements which have been made in the cheaper cars and of the general decline in prices of automobiles, the number of cars produced to sell for over $3,000 has been declining for a number of years and in 1927 was less than one-half as large as in 1920. The ratio of production in various price groups to the total was not very significant in 1927 on account of the temporary curtailment in the lowest group.

Figures in Tables 7, 8, and 9 are in some cases obtained from trade authorities, and in others are based upon production figures obtained by the Bureau of the Census. They will, therefore, in some cases vary slightly from those in other tables, but the discrepancies are small.

Table 7.—Passenger-Car Production, by Price Groups, United States and Canada

Year	Under $1,000		$1,000 to $2,000		$2,000 to $3,000		$3,000 and over	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
1913	289,400	62.7	131,500	28.5	23,100	5.0	17,500	3.8
1919	976,400	58.9	578,500	34.9	69,600	4.2	33,200	2.0
1920	1,118,600	59.4	619,600	32.9	81,000	4.3	64,000	3.4
1921	1,044,700	69.0	352,800	23.3	81,700	5.4	34,800	2.3
1922	1,774,400	74.0	522,700	21.8	59,900	2.5	40,800	1.7
1923	3,068,300	81.6	617,300	16.4	45,200	1.2	30,200	.8
1924	2,435,000	73.4	720,900	21.7	120,600	3.6	44,300	1.3
1925	2,697,000	69.1	1,018,200	26.1	144,000	3.7	40,600	1.1
1926	2,791,500	70.3	995,000	25.0	155,100	3.9	32,400	.8
1927	1,992,600	64.5	920,800	29.8	140,800	4.6	31,900	1.1

Source: Automotive Industries. The grouping is based on retail prices f. o. b. factory.

Table 8.—Number of Open and Closed Cars Produced, by Price Groups, United States and Canada [1]

Year	Under $1,000		$1,000 to $2,000		$2,000 to $3,000		$3,000 and over		Per cent closed, all classes
	Open	Closed	Open	Closed	Open	Closed	Open	Closed	
1919	888,500	87,900	532,200	46,300	52,900	16,700	23,100	10,100	9.7
1920	904,900	213,700	545,300	74,300	63,200	17,800	49,700	14,300	17.0
1921	820,100	224,600	287,800	65,000	51,600	30,100	19,500	15,300	22.1
1922	1,343,000	431,400	315,400	207,300	11,700	48,200	8,700	32,100	30.0
1923	2,074,200	994,100	396,300	221,000	7,700	37,500	2,900	27,300	34.0
1924	1,646,700	788,300	203,900	517,000	26,900	93,700	3,800	40,500	43.3
1925	1,354,400	1,342,600	266,300	751,900	28,800	115,200	3,500	37,100	57.6
1926	892,700	1,898,800	154,000	841,000	25,200	129,900	8,100	24,300	72.8
1927	320,100	1,672,500	205,000	715,800	29,700	111,100	5,800	26,100	81.8
Per cent open or closed to class:									
1919	91.0	9.0	92.0	8.0	76.0	24.0	69.6	30.4	----
1927	16.1	83.9	22.3	77.7	21.1	78.9	18.2	81.8	----

[1] Prior to 1922 figures are based only on price of five-passenger open cars of a given chassis. Thus, if this model sold for less than $1,000, the total production of cars with same chassis is included in the "under $1,000" class, even though closed models sold for over $1,000. In 1922 and later dates actual f. o. b. prices of open and closed models are considered separately and included under proper classification.

Source: Automotive Industries. The grouping is based on retail prices f. o. b. factory.

Preference for the closed car was even more marked in 1927 than in the preceding years. In 1924 about 43 per cent of all cars were of the closed type; in 1925 the percentage jumped sharply to 58, while

in 1926 it rose to 73 per cent, and in 1927 to 82. The proportion of closed cars is not very different, at the present time, as among the several price groups. The difference in price between open and closed models has somewhat diminished. As a result of the popularity of the closed car, seasonal fluctuations in production and sales are becoming less pronounced.

Production of trucks and busses during 1927 numbered 488,000, a decrease of slightly more than 7½ per cent from 1926 and of about 8 per cent from the peak year. The sharpest proportionate decrease occurred in the 5-ton classification, which declined from 9,030 units in 1926 to 4,128 units in 1927. Despite the fact that the production of low-priced cars and trucks was not normal during 1927, it is noteworthy that trucks of a capacity of less than 1 ton increased in output 22 per cent; those of a capacity of 1 to 1½ tons decreased 9 per cent. Production statistics covering trucks and busses are not separable; manufacturers do not know for what purpose their truck chassis are to be used (a difficulty applying equally to the classification of trucks and busses exported).

Table 9.—Motor-Truck and Bus Production, by Capacity, United States and Canada

Capacity	Number							Per cent of total		
	1921	1922	1923	1924	1925	1926	1927	1921	1926	1927
Total	153,100	259,662	407,751	415,906	531,625	527,891	487,653	100.0	100.0	100.0
¾ ton or less	33,809	62,194	44,198	40,864	47,745	64,111	77,978	22.0	12.1	16.0
1 ton and less than 1½ tons	86,862	157,548	296,555	316,820	399,556	353,415	320,338	56.8	66.9	65.7
1½ tons and less than 2 tons	5,608	4,388	24,031	20,465	29,401	47,000	29,107	3.6	8.8	5.9
2 tons and less than 2½ tons	11,206	13,830	14,998	8,225	12,456	19,993	27,313	7.3	3.7	5.7
2½ tons and less than 3½ tons	3,958	11,235	12,516	14,294	16,691	18,231	16,584	2.7	3.4	3.4
3½ tons and less than 5 tons	3,343	3,319	6,761	3,643	6,191	5,514	4,471	2.2	1.5	.9
5 tons	4,714	5,718	4,611	6,635	7,990	9,030	4,128	3.1	1.7	.8
Over 5 tons and special types [1]	3,600	1,430	4,081	4,960	11,595	10,597	7,734	2.3	1.9	1.6

[1] Figures include ambulances, hearses, fire apparatus, busses, etc.

Source: National Automobile Chamber of Commerce. Total figures do not agree exactly with census totals.

Progress in Simplification.

The automobile demonstrates the possibilities of simplification and standardization. Through the practice of machining thousands of parts to the standard dimensions and assembling them progressively costs have been steadily reduced and sales have been enormously expanded. The Society of Automotive Engineers, assisted by the division of simplified practice of the Bureau of Standards, proposed simplified practice recommendations covering roller bearings, spark plugs, brake linings, and piston-ring oversizes during 1927. The simplified line for roller bearings consists of 172 items; that of brake linings, 37; and that of oversize piston rings, 6.

During 1927 the division of simplified practice was requested to cooperate in developing two other projects, one calling for the simplification of balloon-tire sizes and the other for standardization of the height of bumpers, front and rear. As a result of cooperation between the manufactures of automobile tires and the Rubber Association of America, a tentative simplified practice recommendation has been drafted, which would reduce the variety of balloon-tire sizes to 17. It is expected that a general conference of all interests will be held in 1928, at which time the recommendation will be submitted for formal consideration and adoption. The multiplicity of sizes of balloon tires and tubes has caused the tire dealers of the United States to increase their stocks materially. There are 40 or more sizes of tires being made at present, with 10 cross sections and 5 different wheel sizes. Despite this large selection, practically 80 per cent of the tire sales during the first part of 1927 were confined to 5 of these 40 sizes.

The division of simplified practice also cooperated in promulgating a project for the standardization of automobile license plates so that they would conform to the standard-plate bracket slots developed by the Society of Automotive Engineers. Consideration was given to the development of standard plate punching and mountings, standard-size plate symbols, standard gauges of metal, standard size of plate, standard code of numbering, standard location on car, standard illumination, and coordination of color selection. As a result of this cooperative action the 1928 automobile license plates of the 48 States, the District of Columbia, Porto Rico, Alaska, Hawaii, and the Philippine Islands now fit the standard-plate bracket slots. This is the first year in which this condition has existed. Since practically all cars now come through production equipped with plate-mounting brackets conforming to the standard, it is no longer necessary to file, punch, drill, or otherwise mutilate plates to get them to fit.

PRICE MOVEMENT AND MARKET CONDITIONS

There were no pronounced changes in prices during 1927 until the latter part of the year, when 1928 models were announced. Total retail deliveries fell substantially below those of 1926, owing to the very unusual condition which developed in the industry. One of the largest producers of cars practically discontinued production about May, preparatory to the bringing out of a new model embodying very pronounced changes. It is generally conceded that that company held up delivery of a great number of cars for which they had secured orders because of the delay in bringing out the new model. It is also probable that a great number of buyers of other makes of cars in the medium and low priced class held off their purchases pending the

announcement of this new model. Most of the producers of motor cars, however, had a satisfactory volume of business during 1927.

In the latter part of 1927 there were brought out an unusual number of models which had marked changes in appearance and style, especially in the lower-price groups. Very pronounced price reductions and substantial increases in value were also shown in the lower-priced models introduced.

Deliveries throughout the year maintained a reasonable relation to production. Time selling has developed in volume and importance, but there is evidence that the basis on which it is done results in very little risk; probably not so great a percentage of loss is encountered as in many other forms of merchandizing where selling on credit is a practice. The retail dealer continues to secure cash in making his sale, either through full payment by the purchaser or through arrangements made for the purchaser with a finance company, except for such amount as may be represented in an allowance for used cars traded in. The used car situation remained a problem, but was apparently no more serious or unsatisfactory than in other recent years.

The average retail selling price of passenger cars at the factory during 1927 was $953, as compared with $927 in 1926, $866 in 1925, $824 in 1924, $770 in 1922, and $900 in 1920, according to figures furnished by the National Automobile Chamber of Commerce. The average unit value of trucks in 1927 was $1,053, as compared with $1,175 in 1926, $1,350 in 1925, $1,129 in 1924, $1,050 in 1922, and $1,326 in 1920. These figures alone, however, are not criteria of values offered in automobiles. Improvements are continually being made; new models are brought out; prices are reduced. Particularly are these factors operative in the case of cars priced at less than $1,000. Although demand tends steadily toward better cars, yet the dollar now buys greater automobile values than at any time in automobile history.

Servicing facilities continue to expand and to improve; factories are keenly interested and active in expanding and improving service offered by their dealers. This cooperation between factory and dealer results in greater efficiency of service and is naturally a good sales argument for the dealer. The present service facilities are estimated by the National Automobile Chamber of Commerce to include about 56,000 public garages, 72,900 supply stores, and 89,050 service stations and shops.

FOREIGN TRADE

Exports.

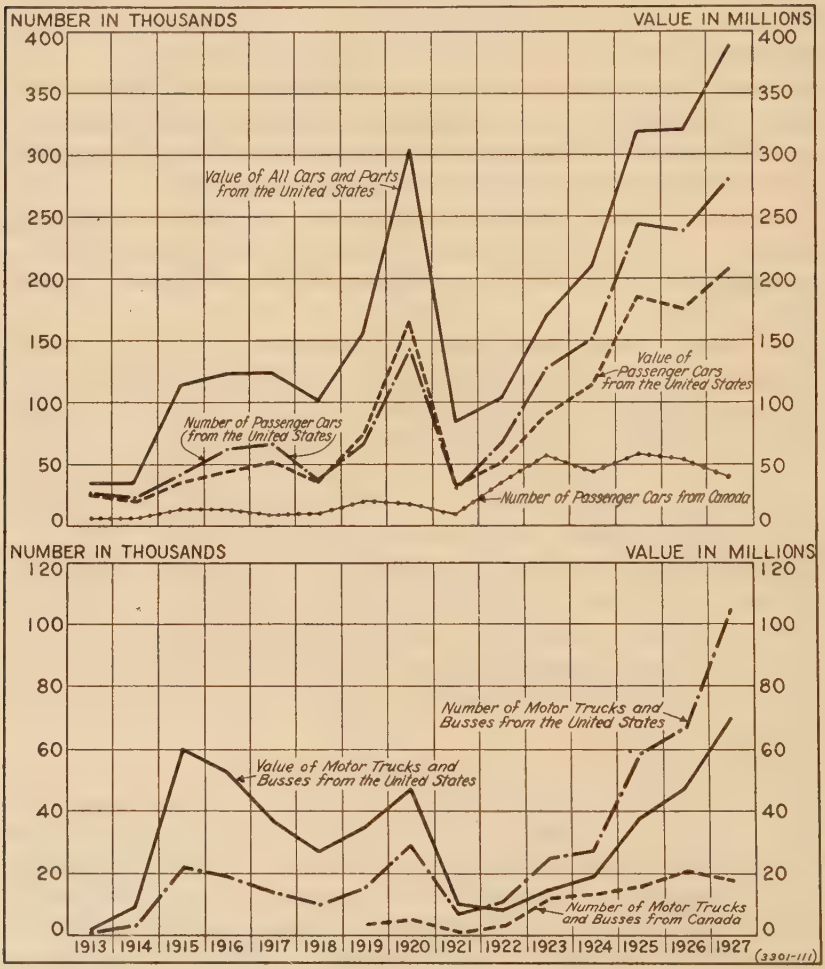
Exports from the United States of all automobile products during 1927 reached a total value of $406,008,000, a gain of 20 per cent compared with the year 1926. (Chart III.) These totals include

(in addition to cars, parts, and accessories) motor cycles, motor boats, marine engines, airplanes, aircraft engines, and aircraft parts and accessories.

The total number of passenger cars, trucks, and busses (other than electric) exported was 384,199. In addition there were 73,265 Ameri-

Chart III.—AUTOMOTIVE EXPORTS, EXCEPT ELECTRIC, FROM THE UNITED STATES AND CANADA

NOTE.—Prior to 1919 Canadian reports did not separate motor trucks and busses from passenger cars.



can-type cars assembled in and sold from branch plants in foreign countries during 1927, built up from materials declared as "parts for assembly" on their export from the United States. The 1927 total (excluding assemblies) showed an increase of 25 per cent, and exports of trucks and busses almost doubled.

Table 10.—Exports of Automobiles, Except Electric, and Parts from the United States and Canada

[Values in thousands of dollars]

Year	Passenger cars		Motor trucks and busses		Automobile engines		Parts [1]	Total value
	Number	Value	Number	Value	Number	Value	Value	
FROM UNITED STATES								
1913	25,880	25,344	1,009	1,687	8,815	1,630	6,270	34,931
1919	67,145	73,701	15,585	35,425	31,358	4,738	42,562	156,426
1920	142,508	165,256	29,136	46,776	30,581	5,032	86,198	303,262
1921	30,950	32,534	7,480	10,336	9,632	1,821	39,059	83,749
1922	66,791	51,050	11,443	8,271	44,986	5,133	38,298	102,751
1923	127,035	90,692	24,859	15,317	40,868	5,342	58,975	170,326
1924	151,380	112,535	27,352	19,199	30,768	4,188	73,761	209,684
1925	244,306	184,886	58,625	37,703	145,848	15,290	80,311	318,190
1926	238,540	176,432	66,880	47,176	118,493	12,526	83,928	320,023
1927	278,742	207,962	105,457	69,913	97,053	10,885	99,346	388,107
FROM CANADA [2]								
1913	5,997	3,395	([3])	([3])	([4])	([4])	211	3,606
1922	35,394	21,060	2,564	1,095	([4])	([4])	1,926	24,080
1923	57,481	29,325	12,439	4,504	([4])	([4])	3,530	37,359
1924	43,883	22,080	12,772	4,429	([4])	([4])	4,992	31,501
1925	58,005	27,795	16,146	5,250	([4])	([4])	6,373	39,418
1926	53,628	25,780	20,696	6,957	([4])	([4])	5,485	38,222
1927	39,900	22,157	17,514	6,272	([4])	([4])	3,434	31,863

[1] Figures for United States include automobile accessories which were not shown separately prior to 1924; value for same, $6,821,079 in 1924, $8,611,000 in 1925, $9,279,096 in 1926, and $7,873,568 in 1927.
[2] Values for Canada are in thousands of Canadian dollars.
[3] Trucks not shown separately; figures included under passenger cars.
[4] Engines not shown separately.
Sources: Bureau of Foreign and Domestic Commerce; Trade of Canada, monthly reports.

Table 11.—Exports of Passenger Cars and Trucks and Busses, Except Electric, from the United States

Value groups and capacity	Number				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Passenger cars	**151,380**	**244,306**	**238,540**	**278,742**	**112,535**	**184,886**	**176,432**	**207,962**
Valued up to $500, inclusive	59,175	100,230	98,106	63,270	21,486	37,170	38,150	23,455
Valued over $500 up to $800	42,406	60,448	67,187	90,214	29,012	42,919	46,059	50,215
Valued over $800 up to $2,000	46,256	78,413	67,493	115,876	52,083	90,578	76,598	111,721
Valued over $800 up to $1,200	--------	59,848	56,275	83,447	--------	62,831	59,326	71,299
Valued over $1,200 up to $2,000	--------	18,565	11,218	32,429	--------	27,747	17,272	40,423
Valued over $2,000	3,543	5,215	5,754	9,382	9,953	14,219	15,625	22,570
Motor trucks and busses	**27,352**	**58,625**	**66,880**	**105,457**	**19,199**	**37,703**	**47,176**	**69,913**
Up to 1 ton, inclusive	20,652	46,503	52,184	85,664	8,408	19,440	24,084	40,567
Over 1 to 2½ tons	5,209	10,423	12,414	17,517	7,082	13,014	16,025	22,686
Over 2½ tons	1,491	1,699	2,282	2,276	3,709	5,249	7,067	6,661

Source: Bureau of Foreign and Domestic Commerce.

Exports of passenger cars valued at $500 or less decreased 36 per cent in 1927, which was probably a result of the suspension of production by one of the leading companies. There were increases of 34 per cent in the number of units with values of $500 to $800 and of 48 per cent in the number valued from $800 to $1,200. The most phenomenal increase, however, was in the $1,200 to $2,000 group;

exports of cars in this price range were 189 per cent greater in number and 134 per cent higher in value than in 1926. Cars priced over $2,000 gained almost 63 per cent in number and 44 per cent in value.

Exports of trucks from the United States during 1927 increased steadily each month. The percentages of increase of units in classifications up to 1 ton and from 1 to 2½ tons were over 64 per cent and 41 per cent, respectively. Although shipments in the heaviest trucks showed a slight drop, the total truck exports were almost 58 per cent above the 1926 total.

The average unit value of passenger cars exported in 1927 was approximately $746, as compared with $740 in 1926, $756 in 1925, $714 in 1923, and $1,051 in 1921. The average for trucks and busses was $663 in 1927, as compared with $705 in 1926, $643 in 1925, $616 in 1923, and $1,382 in 1921.

Canadian exports of automotive products in 1927 amounted to $31,863,000, a decrease of 17 per cent from 1926 and of 19 per cent from 1925. Canada exported 39,900 passenger cars, which was 25 per cent less than in 1926. The number of trucks and busses exported was 17,514, which was slightly less than in 1926 but an increase of 8 per cent over 1925. Practically all of Canada's exports are the output of plants controlled by United States capital, and the suspension of production by one of the largest American companies affected its plants in Canada as well as those in the United States.

Principal Foreign Markets.

The five leading foreign markets during 1927 for United States passenger cars (Table 12), according to the value of reported exports, were Australia, Canada, Argentina, British South Africa, and Belgium, in the order named. Other countries which have ranked among the first five during one or more of the four preceding years are Brazil, the United Kingdom, and Spain. Shipments to the five leading markets in 1927 amounted to 48 per cent of the total value of exports of passenger cars. Exports to Egypt were over three and one-half times as large in 1927 as in 1926, while exports to Germany and the Netherland East Indies more than doubled in value. Of the important European markets Belgium has shown the greatest growth in recent years; exports of passenger automobiles to Belgium in 1927 reached a value more than seven times as large as in 1924. Exports to the United Kingdom, which were much reduced in 1926 as a result of the McKenna duties, increased 84 per cent in 1927.

Australia, Argentina, Canada, Brazil, and British Africa, in the order named, were the five leading motor-truck and bus markets during 1927. Mexico, Japan, the United Kingdom, Belgium, and New Zealand have ranked among the five leaders in other recent years. Of the United States exports of these types in 1927 the five

leading countries absorbed approximately 54 per cent. Exports of trucks and busses to Argentina more than trebled in 1927 and those to Belgium and Denmark were considerably more than twice as large as in 1926.

Table 12.—Exports of Passenger Cars, Except Electric, from the United States, by Principal Countries of Destination

NOTE.—Figures include chassis but not Canadian exports or foreign assemblies of American cars.

Country	Number				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Total	**151,380**	**244,306**	**238,540**	**278,742**	**112,535**	**184,886**	**176,432**	**207,962**
Belgium	1,576	5,193	6,542	13,686	1,666	4,318	6,338	12,220
Denmark	716	8,044	10,132	14,841	693	4,138	5,749	8,490
France	349	1,042	799	1,700	441	1,378	1,121	2,222
Germany	2,347	3,623	3,220	8,281	2,724	4,599	3,439	8,497
Italy	2,600	8,141	4,300	849	875	2,591	1,476	719
Netherlands	1,937	2,430	1,666	2,816	2,151	3,061	1,960	2,746
Norway	504	617	793	1,321	354	522	753	1,234
Spain	4,980	6,384	5,056	7,515	4,244	6,309	5,013	7,709
Sweden	2,759	3,378	3,609	5,651	2,399	3,318	3,514	5,177
Switzerland	991	1,281	840	1,171	1,145	1,666	1,173	1,352
United Kingdom	6,118	17,569	5,826	11,185	5,483	16,218	4,821	8,868
Other Europe	2,170	4,488	4,335	10,841	1,802	4,269	3,883	8,137
Canada	8,966	13,928	25,396	34,300	8,449	12,667	20,233	26,424
Central America	1,419	1,778	1,660	2,048	1,311	1,770	1,611	2,027
Mexico	8,689	12,560	9,809	6,028	4,940	8,050	6,253	4,129
Cuba	7,914	8,035	4,754	4,483	4,196	4,790	3,111	3,338
Argentina	12,219	31,489	25,547	34,245	9,286	20,489	16,955	21,357
Brazil	5,389	13,974	16,703	14,068	4,099	9,204	10,192	9,284
Chile	2,095	1,635	1,548	1,786	1,197	1,104	1,096	1,289
Colombia	680	1,413	1,645	1,785	583	1,242	1,598	1,963
Peru	1,576	1,195	1,071	831	1,227	977	776	627
Uruguay	4,322	4,639	4,970	3,248	2,181	2,430	2,464	2,318
Venezuela	1,324	2,346	2,399	1,858	943	1,881	2,183	1,684
Other South America	403	351	366	667	338	346	363	563
British India	2,261	2,669	2,530	3,531	1,654	2,281	2,210	2,987
China, Hong Kong, and Kwantung	1,314	1,752	2,208	1,246	1,059	1,335	1,510	910
Netherland East Indies	1,271	1,799	2,499	7,156	1,079	1,678	2,206	4,969
Japan	4,147	1,095	1,642	2,715	2,770	1,144	1,600	2,316
Palestine and Syria	987	1,467	1,120	885	579	871	684	651
Philippine Islands	2,255	3,173	4,546	3,422	1,724	2,238	3,081	2,650
Australia	39,564	48,357	48,954	40,954	27,030	34,336	33,986	26,686
New Zealand	4,065	7,700	8,989	5,392	3,679	6,766	7,372	4,004
British South Africa	7,622	11,990	14,679	17,880	6,444	10,863	11,703	12,911
Other British Africa	695	910	938	1,014	491	768	794	846
Egypt	309	579	859	3,433	195	400	596	2,189
Other countries	4,847	7,282	6,591	5,910	3,102	4,865	4,518	4,470

Source: Bureau of Foreign and Domestic Commerce.

The above mentioned rankings are based on the value of the products rather than on the number of units exported to the various countries. If the foreign assemblies of units from parts not declared as units of complete vehicles in export statistics were included, or if the rankings were based on the number of units, the relative importance of some of these markets would differ. Australia, however, continues to rank first in importance as a destination for United States exports of motor vehicles, whether the criterion be number or value.

Table 13.—Exports of Motor Trucks and Busses, Except Electric, from the United States, by Principal Countries of Destination

NOTE.—Figures include chassis but not Canadian exports or foreign assemblies of American cars.

Country	Number				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Total	**27,352**	**58,625**	**66,880**	**105,457**	**19,199**	**37,703**	**47,176**	**69,913**
Belgium	28	2,269	1,926	4,123	27	889	756	1,789
Denmark	35	3,246	3,289	7,569	49	1,383	1,444	3,430
Italy	2,513	7,419	2,291	199	638	1,871	594	68
Norway	27	107	179	266	35	136	252	384
Spain	638	1,374	2,227	3,203	269	644	1,180	1,699
Sweden	1,398	271	368	840	519	278	376	681
United Kingdom	703	4,320	4,895	5,475	588	2,518	3,019	2,708
Other Europe	352	1,525	1,998	3,807	230	1,279	1,210	2,429
Canada	1,429	1,837	3,047	4,253	1,871	2,692	4,132	5,773
Mexico	1,393	3,586	2,203	1,743	829	2,041	2,033	1,459
British West Indies and Bermudas	286	336	364	386	191	217	198	303
Cuba	1,478	2,087	1,909	1,842	563	1,271	1,394	1,948
Argentina	608	1,881	2,480	10,554	982	1,751	2,210	7,248
Brazil	1,673	4,695	5,886	11,061	491	1,921	2,701	5,350
Chile	1,272	1,605	837	855	754	1,378	919	751
Colombia	252	829	1,327	1,670	267	676	1,546	1,994
Peru	1,116	1,458	1,001	669	816	1,245	837	680
Uruguay	1,247	1,362	1,362	1,151	400	500	626	1,057
Venezuela	439	845	1,231	684	359	700	1,265	685
Other South America	170	269	187	221	104	182	171	212
British India	323	1,121	1,456	1,913	292	894	1,158	1,453
China	270	560	1,032	723	139	406	590	474
Philippine Islands	717	1,117	1,246	1,499	368	653	678	909
Australia	2,958	7,574	15,156	24,407	3,789	5,954	10,343	14,361
New Zealand	575	1,396	1,833	1,126	891	1,498	1,403	890
British Africa	835	2,101	2,860	5,624	858	2,018	2,493	4,842
Other countries	4,617	3,435	4,290	9,594	2,880	2,709	3,649	6,334

Source: Bureau of Foreign and Domestic Commerce.

Imports.

During 1927 United States imports of motor vehicles numbered 635 dutiable automobiles and chassis, valued at $1,219,000, while in 1926 the number was 813, valued at $1,353,000. Canada and France are the chief suppliers. The value of bodies and parts imported in 1927 amounted to $1,146,000, of which Germany supplied over 70 per cent.

Branches and Assembly Plants in Foreign Countries.

During 1927 seven new branch plants of American automobile companies were established abroad, making a total of 29 now in operation. Active assembly of American cars abroad began in 1923, when there were six assembly plants located in foreign countries. Sales of automobiles produced by these plants during 1927 approximated 198,500, an increase of 34 per cent above the 1926 total and of 161 per cent as compared with 1923. In all except one of these assembly plants established abroad most of the parts used were imported from the United States in finished or semifinished condition.

Assembly parts exported from Canada are invariably declared as a given number of complete-car units. All exporters in the United

States do not ship parts on a car-unit basis; thus cars assembled abroad in plants under control of companies in the United States are declared on export either as "parts for assembly" and "engines," or as a given number of car units. Exports during 1927 as "parts for assembly" resulted in 73,265 automobiles.

MANUFACTURING CONDITIONS IN OTHER COUNTRIES

During 1927 the United States and Canada manufactured 86 per cent of the world's passenger cars, trucks, and busses; in 1926 the percentage was 89.5, and in 1925, 90.5. According to reliable reports, Europe built approximately 578,586 automotive vehicles, an increase of 9.3 per cent over 1926 and 24.3 per cent over 1925. European manufacturers are redoubling their efforts to secure a larger share of European and other markets; the American system of mass production is being established wherever possible, and where necessary American tools and machinery are utilized. There is, moreover, a noticeable tendency to incorporate in the local product many of the features which have created and maintained for American vehicles their world-wide popularity and preference.

The United States and Canada are the only countries which compile official automobile production records. The best estimates available show the production of passenger cars, trucks, and busses in foreign countries during 1927, as follows:

United Kingdom	231, 920	Switzerland	1, 585
France	190, 000	Sweden	1, 250
Germany	72, 000	Spain	585
Italy	54, 000	Russia	510
Czechoslovakia	10, 200	Japan	305
Austria	8, 700	Hungary	282
Belgium	6, 500	Denmark	190

A table indicating the number of motor cars, trucks, and busses registered in the principal countries (in point of motor-vehicle use) of the world in 1927 will be included in Volume II—Foreign Countries.

MOTOR CYCLES

Exports of motor cycles during 1927 numbered 19,469, valued at $4,374,000, a decrease in value of 11 per cent from 1926 and 14 per cent from 1925. The total production in the United States was 46,000, an increase of about 10 per cent over 1926 and 17 per cent over 1925.

The chief foreign markets, according to value of exports during 1927, were Australia, Germany, Sweden, Canada, and Japan. Exports to Australia decreased 45 per cent in 1927. Italy, which ranked second in 1925 and fifth in 1926, now holds eleventh position. Exports to Czechoslovakia, on the other hand, increased over two and one-half times.

The competition which the motor cycle has to face abroad in the low-priced automobile is reflected in the decreases during 1927. When the difference in price between the two diminishes the purchaser tends to select the four-wheel vehicle. Moreover, improved roads favor the automobile. The motor cycle has heretofore found favorable markets in regions where road conditions are poor and where greater power is needed than is furnished by low-power European automobiles. The motor cycle is still widely used in police and other government departments all over the world.

Table 14.—Production and Exports of Motor Cycles: United States

Calendar year	Production, number	Exports		Calendar year	Production, number	Exports	
		Number	Value			Number	Value
1913		4,131	$800,061	1921	[1] 26,991	11,001	$3,517,769
1914	[1] 62,154	6,556	1,252,328	1922	28,000	15,976	4,028,742
1915	56,000	14,846	2,823,792	1923	[1] 41,898	22,112	5,298,597
1916	54,000	16,656	3,189,386	1924	36,000	16,859	4,006,408
1917	53,000	14,320	3,035,032	1925	[1] 39,350	22,845	5,079,939
1918	52,000	9,212	2,169,385	1926	42,000	22,670	4,915,949
1919	[1] 59,122	24,481	6,687,436	1927	46,000	19,469	4,373,808
1920	64,000	37,622	10,756,580				

[1] Figures from Bureau of the Census.

Sources: Production figures from Bureau of the Census, the Motor Cycle and Allied Trades Association; export figures from Bureau of Foreign and Domestic Commerce.

MOTOR BOATS AND MARINE ENGINES

Exports of motor boats and marine engines, exclusive of Diesel and semi-Diesel engines, amounted to $2,567,000, an increase of 12 per cent over 1926. The increase is particularly noticeable in shipments of outboard motors to a number of European countries. Exports of these detachable engines in 1927 were about two and one-half times as large as three years earlier. Exports of other marine engines have also been steadily expanding, while exports of motor boats increased in number during 1927, but were smaller in value than in 1926.

Table 15.—Exports of Motor Boats and Marine Engines [1]

Year	Motor boats		Detachable engines		Other engines	
	Number	Value	Number	Value	Number	Value
1922	114	$184,024	([2])	([2])	3,969	$806,095
1923	87	237,548	3,124	$340,868	2,530	898,918
1924	127	174,820	2,633	280,417	2,476	854,830
1925	174	422,361	3,611	377,149	2,830	1,029,242
1926	212	562,077	5,165	576,301	3,147	1,145,425
1927	296	510,155	6,541	807,304	2,672	1,249,424

[1] Figures exclude Diesel, semi-Diesel, and other heavy-oil engines.
[2] Detachable engines not shown separately in 1922.

Source: Bureau of Foreign and Domestic Commerce.

Canada, the leading market, imported 59 more motor boats in 1927 than in 1926, the value almost doubling. The number of motor boats exported to the United Kingdom in 1927 was over five times as large as in the previous year, while the total value showed an increase of 30 per cent.

AIRCRAFT

Manufactures of aircraft and related products during 1927 reached a value of about $19,835,000, which was 12 per cent more than in 1926 and nearly three times as large as in 1921. There were 1,828 airplanes produced during 1927, of which 105 were seaplanes, including 79 of the amphibian type. An increased number of strictly commercial airplanes were produced and there was a pronounced trend from airplanes powered with war-surplus motors to those with the air-cooled and more modern water-cooled types of engines.

Table 16.—Aircraft Products by Number and Value

Item	1919	1921	1923	1925	1926	1927 [1]
Total value	**$14,372,643**	**$7,430,824**	**$13,142,364**	**$12,775,181**	**$17,694,905**	**$19,835,485**
The aircraft industry	$14,372,643	$6,652,981	$12,945,263	$12,524,719	$17,670,405	$19,835,485
Aircraft parts, secondary products of other industries		[2] $777,843	$197,101	$250,462	[3] $24,500	([4])
Airplanes:						
Number	432	290	505	711	[5] 1,179	1,723
Value	$3,466,452	$3,818,340	$6,166,218	$5,908,335	$8,771,077	$11,904,705
Seaplanes:						
Number	230	12	82	78	7	[6] 105
Value	$4,580,016	$314,768	$1,570,851	$765,324	$99,950	$2,226,520
Under construction at close of year (both classes):						
Number	341	374	281	259	508	([4])
Value	$1,658,670	$966,322	$1,339,737	$1,428,447	$2,377,769	([4])
Parts and engines for sale	$2,601,995	$901,619	$2,839,294	$3,794,885	$6,054,973	$4,338,252
All other products, including repair work [7]	$2,065,510	$1,429,775	$1,226,264	$878,190	$391,136	$1,336,008

[1] Partly estimated.
[2] Aircraft and parts.
[3] Value of aircraft made by establishments engaged primarily in the manufacture of engines.
[4] No data available.
[5] Excluding 150 planes built by individuals and firms engaged primarily in air-service operations.
[6] Includes 79 amphibians.
[7] Including experimental work, pontoons, airships, parachutes, balloons, automobile bodies, sea sleds, etc.

Source: Bureau of the Census.

The total value of aircraft, engines and parts, except tires, exported in 1927 was $1,904,000, an increase of 85 per cent over 1926. Exports of parts, except engines and tires, reached a value over five and one-half times as large as in 1925. Shipments of aircraft have shown a somwhat less rapid increase, but were over twice as high in value in 1927 as in 1924. The large increase in export sales of aircraft engines which occurred in 1926 was followed by a recession in 1927.

Eight countries took nearly four-fifths of this trade during 1927. With few exceptions, the leading destinations of airplane exports in 1927 were the same as in the two preceding years. The leading customers in 1927 were Canada, Peru, Chile, and Soviet Russia.

Table 17.—Exports of Aircraft Products From the United States

Calendar year	Airplanes, seaplanes, and other aircraft [1]		Parts, except engines and tires		Aircraft engines		Total value
	Number	Value	Pounds	Value	Number	Value	
1913	19	$61,325	[2]	$25,606	[3]	[3]	$86,931
1918	48	607,255	[2]	14,670,269	[3]	[3]	15,277,524
1919	44	215,300	[2]	3,249,226	[3]	[3]	3,464,526
1920	65	598,274	[2]	554,375	[3]	[3]	1,152,649
1921	48	314,940	[2]	157,608	[3]	[3]	472,548
1922	37	156,630	471,495	265,481	147	$72,819	494,930
1923	48	309,051	275,275	58,949	80	65,558	433,558
1924	59	412,738	165,472	165,926	146	219,609	798,273
1925	80	511,282	95,248	101,584	73	170,793	784,659
1926	50	303,149	[4]	150,329	297	573,732	1,027,210
1927	63	848,568	[4]	570,117	84	484,875	1,903,560

[1] No aircraft other than airplanes and seaplanes were exported prior to 1923.
[2] Statistics not shown in pounds prior to 1922.
[3] Not separated from other internal-combustion engines prior to 1922.
[4] Not available.

Source: Bureau of Foreign and Domestic Commerce.

RUBBER AND RUBBER PRODUCTS

SUMMARY.—Crude rubber imports in 1927 set a new high record of 954,750,000 pounds, 3 per cent more than in 1926. The value of imports was $339,859,000, as compared to $505,818,000 in 1926. The December, 1926, closing price of crude rubber at New York was 39 cents per pound; price fluctuations during 1927 were relatively narrow, ranging from a high of 42¼ cents in March to a low of 33 cents in September and October, then advancing again to 41½ cents at the end of the year. Announcement that the British restrictions on rubber exports from Malaya and Ceylon will be removed November 1, 1928, caused a drastic decline during February, March, and April, 1928.

Production of finished goods during 1927, as a whole, was satisfactory, but during the last half of the year the demand for automobile tires was greatly reduced by the decline in automobile production. Owing to continued use of reclaimed rubber as a substitute, consumption of crude rubber increased but slightly, from 366,000 tons in 1926 to about 375,000 tons in 1927. Prices of finished goods remained fairly stable during 1927; a reduction in tire prices occurred in November.

The value of exports of rubber products in 1927 reached $69,593,000, an increase of 16 per cent over the record value of 1926. This was the result of heavily increased tire exports.

Table 1.—Rubber: Summary Table

Item	1914	1921	1923	1924	1925	1926	1927	Per cent change 1927 from 1926
Imports of crude rubber:								
Thousands of pounds	143,065	415,283	692,483	734,845	888,478	925,878	954,750	+3.1
Thousands of dollars	70,473	73,773	185,060	174,231	429,705	505,818	339,859	−32.9
Average per pound	$0.4926	$0.178	$0.267	$0.237	$0.484	$0.546	$0.356	−34.8
Consumption of crude rubber, thousands of pounds: [1]								
For tires and tire sundries	(2)	280,265	494,932	563,723	665,249	630,909	652,257	+3.4
For other rubber products	(2)	65,335	120,969	112,260	127,427	107,713	115,450	+7.2
Value of products, thousands of dollars: [1]								
Tires and tire sundries	[3]146,422	506,461	558,463	598,416	803,659	866,795	785,419	−9.4
Other products	[3]154,572	213,286	324,957	294,304	338,437	339,227	327,961	−3.0
Production, thousands: [1]								
Automobile casings	[3] 8,021	21,857	34,116	38,804	45,729	46,177	48,536	+5.1
Automobile tubes	[3] 7,907	27,127	45,219	53,094	62,047	57,514	52,696	−8.4
Rubber products exported, thousands of dollars	12,183	30,786	36,972	40,622	52,630	60,051	69,593	+15.9

[1] Statistics of the Rubber Association of America, which do not include the entire industry.
[2] Not available.
[3] Bureau of the Census.

CRUDE RUBBER

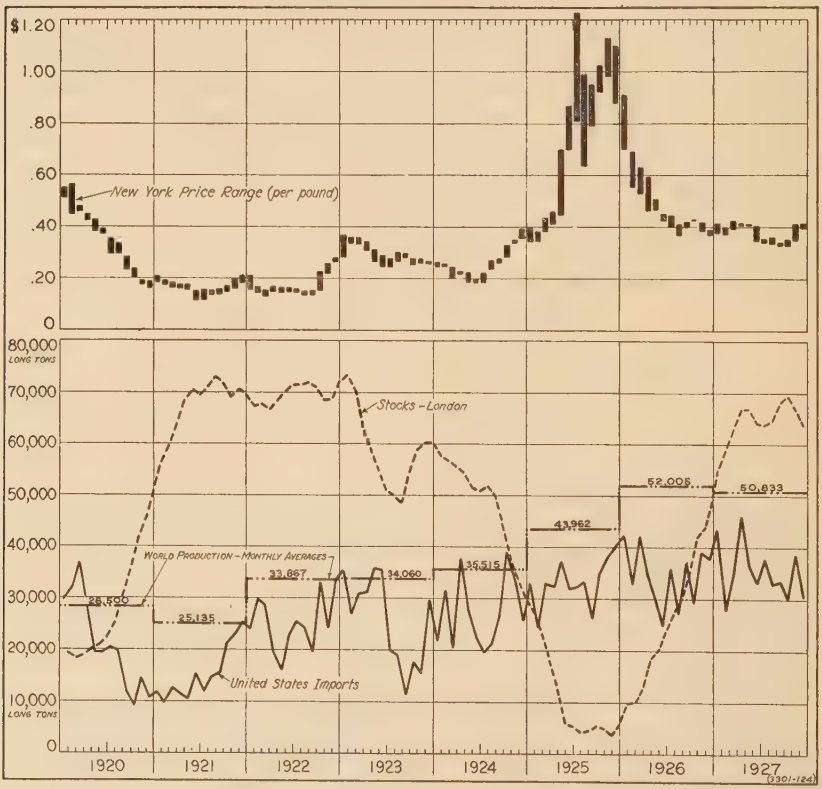
Imports of Crude Rubber.

American industry is entirely dependent on imports for its crude rubber supply. The development of our rubber industry is admirably reflected in the growth of our imports since 1870, shown in Table 2.

Rubber footwear, waterproof clothing, and mechanical rubber goods were the chief products of the industry in its early period; from 1890 to 1905 the advent of the pneumatic bicycle tire was the chief cause of the growing demand for rubber; since 1905 the growth has resulted mainly from constantly increasing consumption of rubber for automobile tires. The percentage increase in imports by five-year periods has been both rapid and well maintained.

The automobile industry began its rapid expansion in 1910, and for each subsequent year an increasing percentage of the rubber con-

Chart I.—CRUDE RUBBER: WORLD PRODUCTION, IMPORTS INTO THE UNITED STATES, LONDON STOCKS, AND PRICES



sumed in the United States has been used for tires and tire sundries; the percentage of the total consumption so used rose from 70 per cent in 1917 to 85 per cent in 1927.

The growth in consumption from 1923 to 1925 was chiefly the natural result of prosperity in America; the abnormal increase in 1925 was largely caused by the change from high-pressure to low-pressure tires and by speculative buying in anticipation of tire price increases. In 1926 and 1927, owing to increased use of rubber sub-

stitutes and greater care in the use and repair of tires, actual consumption of rubber in the United States was less than in 1925, the increased imports being used to reconstitute depleted stocks of raw material and to supply the growing reexport trade in rubber with Canada, Russia, and other countries. Table 2 covers gross imports, not deducting reexports.

Table 2.—Imports of Crude Rubber [1]

Calendar year	Quantity (in thousands of pounds)	Value		Calendar year	Quantity (in thousands of pounds)	Value	
		Thousands of dollars	Average per pound			Thousands of dollars	Average per pound
1871–1875	12,798	5,375	$0.420	1914	143,065	70,473	$0.493
1876–1880	14,614	6,632	.454	1915	221,482	111,031	.501
1881–1885	23,232	12,636	.544	1916	270,090	159,745	.591
1886–1890	32,645	14,397	.441	1917	405,638	233,221	.575
1891–1895	38,329	17,883	.467	1918	325,959	146,378	.449
1896–1900	44,840	25,217	.562	1919	535,940	215,820	.403
1901–1905	57,555	36,147	.628	1920	566,546	242,796	.429
1906–1910	79,391	65,035	.819	1921	415,283	73,773	.178
1911–1915	136,268	86,460	.634	1922	674,410	101,843	.151
1916–1920	420,835	199,592	.474	1923	692,483	185,060	.267
1921–1925	681,100	192,923	.283	1924	734,845	174,231	.237
1910	90,139	98,007	1.087	1925	888,478	429,705	.484
1911	82,852	74,411	.898	1926	925,878	505,818	.546
1912	118,058	99,567	.843	1927	954,750	339,859	.356
1913	115,881	76,821	.663				

[1] Includes dry weight of liquid latex.

Source: Bureau of Foreign and Domestic Commerce.

In 1924 and 1925 rubber imports were heavier in the last half of each year than in the first half; in 1926 semiannual imports were about equal; and in 1927 imports were heavier during the first half of the year. Conditions in recent years have been abnormal, owing to the effect of restriction on supplies, and it is difficult to discover the usual monthly trend, but it appears that arrivals are quite uniformly heavier from November to April than during the other six months, while a running average for the last five years shows the third quarter has much the lowest average arrivals, the peak months being April and January and the low months August and September.

The average import value per pound (Tables 2 and 3) is figured on the value declared by importers and represents closely their actual purchase price. This value represents prices according to contracts made some weeks or months before arrival of the rubber, so that changes in import value lag behind changes in the market price of rubber. The monthly averages during 1925 and 1926 reflect the effect on rubber prices of uncompromising adherence to the restriction scheme after stocks of rubber were depleted in 1925; in 1927 import values were fairly steady, declining toward the end of the year as a result of purchases made abroad during August, September, and October, the period of lowest market prices.

Table 3.—Monthly Imports of Crude Rubber into the United States

Month	Quantity (thousands of pounds)				Value (thousands of dollars)				Average value per pound			
	1924	1925	1926	1927	1924	1925	1926	1927	1924	1925	1926	1927
Total	734,845	888,478	925,878	954,750	174,231	429,705	505,818	339,859	$0.237	$0.484	$0.546	$0.356
January	49,419	73,692	94,985	97,082	12,155	22,407	72,528	36,754	.246	.304	.764	.379
February	70,589	55,319	73,618	63,475	17,644	18,532	58,733	23,110	.250	.335	.798	.364
March	46,440	74,082	94,421	79,553	11,640	25,147	70,590	28,693	.251	.339	.748	.361
April	84,171	72,813	77,378	103,493	20,500	24,875	48,743	37,322	.244	.342	.630	.361
May	62,167	82,727	66,655	81,800	14,304	30,312	36,896	30,984	.230	.366	.554	.379
June	50,132	70,714	55,776	74,021	11,254	26,856	34,499	27,850	.225	.380	.619	.376
July	43,623	72,700	80,237	84,397	9,185	33,702	33,061	31,678	.211	.464	.412	.375
August	48,008	74,844	61,375	73,495	9,865	39,834	24,671	26,397	.206	.532	.402	.359
September	59,928	59,062	83,130	74,595	12,394	36,686	32,625	25,314	.207	.621	.393	.339
October	87,152	77,617	66,027	67,613	20,339	50,027	25,321	22,163	.233	.645	.384	.328
November	75,199	84,572	87,706	86,445	19,027	56,272	34,891	27,395	.253	.665	.398	.317
December	58,017	90,336	84,569	68,781	15,922	65,056	33,261	22,198	.274	.720	.393	.323

Source: Bureau of Foreign and Domestic Commerce.

Table 4.—United States Imports of Crude Rubber, by Countries of Shipment

Year	Total	United Kingdom	Ceylon	British Malaya [1]	Other British East Indies	Netherland East Indies	Brazil	Other Europe	All other countries
Quantity, thousands of pounds: [2]									
1900	49,377	8,611	(3)	(3)	640		28,027	8,388	3,711
1905	67,234	10,025	(3)	1,899	207	7	36,594	14,546	3,957
1910	101,045	15,557	(3)	1,278	1,124	18	39,511	16,127	[4] 27,430
1913	113,384	34,165	(3)	5,639	6,536	81	43,519	17,955	5,490
1920	566,546	75,297	(3)	296,448	55,476	72,374	36,982	16,840	13,129
1921	415,283	41,521	(3)	219,194	48,846	53,012	23,274	23,977	5,459
1922	674,410	50,880	76,826	406,327	1,477	92,362	25,009	15,926	5,604
1923	692,483	66,612	61,443	399,108	1,561	112,305	25,940	14,595	10,920
1924	734,845	85,237	61,075	407,850	3,700	131,763	29,026	10,506	5,690
1925	888,478	84,731	66,398	517,148	3,991	153,241	34,715	18,308	9,947
1926	925,878	57,522	81,532	573,204	4,626	156,555	29,659	14,253	8,527
1927	954,750	73,788	84,979	568,629	1,018	169,551	38,146	11,330	7,310
Value, thousands of dollars: [2]									
1924	174,231	22,315	15,007	94,170	911	32,694	5,441	2,466	1,229
1925	429,705	47,951	35,687	244,636	1,857	65,639	16,174	12,306	5,454
1926	505,818	33,536	44,863	314,878	2,615	87,157	11,845	7,206	3,718
1927	339,859	26,743	30,597	203,823	483	62,817	9,699	3,719	1,978

[1] Designated as Straits Settlements prior to 1926.
[2] Fiscal years to and including 1913, calendar years thereafter.
[3] Included with "Other British East Indies"; not shown separately.
[4] Includes 23,486,384 pounds of rubber, valued at $10,918,104, from Mexico.

Source: Bureau of Foreign and Domestic Commerce.

Sources of Rubber Imports.

The countries from which rubber has been imported are shown in Table 4. Brazil was the leading source before the war, but has accounted for only about 4 per cent of the total in recent years. British Malaya, Netherland East Indies, Ceylon, and the United Kingdom, named in order of importance, have been the leading sources for the past five years. All of the rubber from the United Kingdom and Europe represents reshipments of imported rubber, which comes mostly from the Middle East. A considerable part of

the imports credited to British Malaya is produced in the Netherland East Indies. In 1910 Mexico was second only to Brazil as a source of imports (the statistics for that year included guayule rubber, which has since been reported separately); Mexico now accounts for only about 1 per cent of rubber imports, including guayule rubber. The table indicates the controlling position of British interests in production and marketing of rubber. In 1927, 76 per cent of our imports was received from the United Kingdom and British possessions, as compared to 19 per cent in 1910.

Table 5.—Crude Rubber: World Production, United States Imports and Reexports, Net Imports, and Price

[Quantities are in long tons]

Year	World production			United States [1]				Average yearly price per pound	
	Middle east	Other	Total	Imports	Reexports	Net imports	Per cent of world production	Fine para [2]	Ribbed smoked sheet [3]
1905	174	59,320	59,494	28,637	1,616	27,021	45.4	$1.243	
1910	10,916	83,034	93,950	45,003	2,749	42,254	45.0	1.908	$2.066
1911	17,501	159,588	94,055	44,424	2,523	41,901	44.6	1.110	1.413
1912	33,306	80,970	114,276	58,435	2,456	55,979	49.0	1.052	1.216
1913	53,644	66,479	120,123	53,906	1,881	52,025	43.3	.807	.820
1914	74,587	48,586	123,173	64,884	2,618	62,266	50.6	.616	.653
1915	116,370	54,456	170,826	101,093	2,082	99,011	58.0	.557	.659
1916	161,842	52,247	214,089	121,709	4,098	117,611	54.9	.669	.725
1917	221,452	56,688	278,140	183,255	4,000	179,255	64.4	.648	.722
1918	181,061	38,623	219,684	146,132	2,746	143,386	65.3	.549	.602
1919	348,990	50,741	399,731	240,689	2,282	238,407	59.6	.483	.487
1920	305,106	36,888	341,994	253,680	4,160	249,520	73.0	.333	.363
1921	277,516	24,102	301,618	185,452	5,716	179,736	59.6	.182	.163
1922	379,520	26,878	406,398	301,203	4,809	296,394	72.9	.183	.175
1923	380,271	28,448	408,719	310,299	8,772	301,527	73.8	.248	.295
1924	393,931	32,247	426,178	329,322	10,309	319,013	74.9	.212	.262
1925	488,523	39,026	527,549	400,423	14,827	385,596	73.1	.569	.725
1926	583,730	40,315	624,045	417,643	17,671	399,972	64.1	.380	.487
1927	[4] 565,000	[4] 45,000	[4] 610,000	431,246	27,775	403,471	66.1	.268	.381

[1] Import figures in this table include with crude rubber, guayule, which is excluded in other import tables, but is included in this table in order to make a comparison with production figures which also include guayule.

[2] Bureau of Labor Statistics, Department of Labor.

[3] Commercial Research Department, United States Rubber Co., for 1910, thereafter, compiled from the India Rubber World.

[4] Including estimates.

Source: Bureau of Foreign and Domestic Commerce, except for prices.

World Production.

World production of rubber as measured by net exports from producing countries increased from 426,000 tons in 1924 to 528,000 tons in 1925 and to 624,000 tons in 1926. This increase was the result of the higher rate of exports permitted in the area under restriction in 1925 and 1926 and to the greater liberality in assessment of standard production for those areas, as well as to increased production in non-restricted areas. The rate of exportation allowed under restriction was 100 per cent of assessed standard production from February 1 to November 1, 1926, 80 per cent to February 1, 1927, 70 per cent to May 1, 1927, and thereafter 60 per cent. During 1926 producers did not

export at the full rate permitted, but during 1927 they used old export permits to cover exports in excess of the rate nominally in effect, and the total 1927 production exported dropped only to 610,000 tons. The British share of total production was 67 per cent in 1922 and only 53 per cent in 1927, indicating the rapid growth of production in non-British areas. The United States net imports represented 73 per cent of world production in 1922 and only 66 per cent in 1927, showing a growth in foreign consumption of rubber. The statistics in Table 5 include crude rubber of all kinds (plantation grades, wild rubber, and guayule rubber).

Crude Rubber Stocks.

Stability in the crude-rubber market depends largely on availability of stocks, which are maintained chiefly in the United States and United Kingdom, as shown in Table 6 for representative dates in recent years. Stocks declined steadily from December, 1922, to September, 1925, owing to the restriction on exports from British Malaya and Ceylon; the larger releases from British possessions have caused a steady increase in stocks since 1925. At the average monthly rate of consumption in the United States during 1927, the total amount of rubber on hand and afloat for the United States at the end of the year was sufficient for 4.5 months' supply, as compared to 3.9 months' supply at the end of 1926, 3 in 1925, 3.6 in 1924, 4.3 in 1923, and 5.8 at the end of 1922. Comparing world consumption with total stocks in United States and United Kingdom, the number of months' supply available at the end of these years follows: 1927, about 3.5; 1926, 3.2; 1925, 1.9; 1924, 2.8; 1923, 3.9; and 1922, 5.3.

Table 6.—Stocks of Crude Rubber

[Long tons]

Date	Total	United States			United Kingdom London and Liverpool
		On hand	Afloat	Total	
Dec. 31, 1921	209,420	94,770	34,989	129,759	79,661
June 30, 1922	196,034	82,110	33,266	115,376	80,658
Dec. 31, 1922	216,620	89,759	45,780	135,539	81,081
June 30, 1923	185,983	100,885	27,990	128,875	57,108
Dec. 31, 1923	176,213	72,920	36,465	109,385	66,828
June 30, 1924	144,822	64,408	24,280	88,688	56,134
Dec. 31, 1924	131,415	54,831	44,159	98,990	32,425
Mar. 31, 1925	120,733	54,502	46,254	100,756	19,977
June 30, 1925	102,302	47,770	48,708	96,478	5,824
Sept. 30, 1925	89,817	33,131	50,480	83,611	6,206
Dec. 31, 1925	104,564	48,436	49,800	98,236	6,328
Mar. 31, 1926	115,847	58,191	43,204	101,395	14,452
June 30, 1926	125,366	59,254	40,713	99,967	25,399
Sept. 30, 1926	135,578	58,883	39,815	98,698	36,880
Dec. 31, 1926	170,755	68,876	50,529	119,405	51,350
Mar. 31, 1927	193,084	81,453	47,120	128,573	63,511
June 30, 1927	196,546	84,788	44,871	129,659	66,887
Sept. 30, 1927	200,511*	92,938	36,068	129,006	71,505
Dec. 31, 1927	206,927	95,124	45,542	140,666	66,261
Mar. 31, 1928	211,023	108,358	37,358	145,716	65,307

Sources: Rubber Association of America and British Rubber Growers' Association; statistics for United States estimated 95 per cent complete.

Crude Rubber Prices.

The high and low monthly prices of rubber are shown from 1921 to 1927 in Table 7. The 1925 price advance was the direct result of continued restriction of exports, coupled with increased demand at a time when world stocks were abnormally low. The 1926 price decline was caused by conservation in use of rubber by manufacturers and conservation in use of tires by motorists, which decreased the demand for crude rubber and allowed stocks to accumulate in trading centers.

Table 7.—Monthly Prices of Ribbed Smoked Sheet Rubber at New York

NOTE.—In cents per pound. Prices during the early months of 1928 have been: January, 38⅝–41⅛; February, 28½–37⅝; March, 23¾–29⅜; April, 17¼–27½.

Month	1921	1922	1923	1924	1925	1926	1927
January	18 –20½	15½–21¼	28½–37⅛	24¾–26⅝	34¼– 39½	70 –91	37¾–41½
February	17½–19	14¼–16¾	33⅞–36⅛	25 –26	34⅜– 38¼	55½–69	37¼–40
March	16¼–18	13 –15¼	33⅜–35⅞	20½–24¾	38⅛– 43¾	52¾–63	39½–42¼
April	16 –17¼	14¾–16¾	31 –34¼	22 –23⅛	41¼– 46	46½–59½	40½–41½
May	15½–17½	14⅜–16½	26⅞–31⅛	18⅝–22⅝	44¾– 70	47 –50½	40½–41¼
June	11½–14¾	14⅜–16¼	24¾–29¼	18⅜–19¾	70 – 87	41½–45	34⅜–40½
July	11⅛–15½	14½–15¾	24¾–28	18⅝–22⅜	81 –123	40⅛–44½	34¼–35⅝
August	13½–15	13⅝–14¾	27 –30⅛	24⅛–27⅜	64 – 99	36⅜–41	34 –36¼
September	13¾–15¾	13⅝–15¼	28⅜–29⅞	26¼–28	79 – 95	40 –42¼	33 –34¼
October	14¾–17	15¼–22¾	25¾–28¼	28½–33	92 –102½	42½–43	33 –35½
November	16 –19¾	22½–26	26¼–27⅞	33¾–35	98 –113	38½–42	35½–41¼
December	18¼–21¼	26¾–28⅜	26 –27⅛	35⅝–39⅝	88 –110	36¾–39	39¾–41½

Source: India Rubber World.

The price stability from June, 1926, to the end of 1927 was largely due to the course of restriction. Beginning May 1, 1926, the regulations provided for restriction of exports unless the price averaged 42 cents or more per pound. This average was maintained by concerted buying of American manufacturers in the May–July (1926) restriction quarter, and producers in Malaya and Ceylon were allowed to export at 100 per cent assessed production capacity until November 1. Actually exports were less than was permitted, resulting in a carry-over of export permits in the hands of producers. These permits were utilized after November 1, 1926, when exports were nominally restricted to 80 per cent of assessed capacity, and as the allowance declined further, the old coupons were practically all used to cover shipments in excess of the nominal rate. Thus the rate of shipments was maintained, while at the same time more drastic application of restriction made producers optimistic as to the future course of prices and made them unwilling to sell much below the 42-cent price level. Waning optimism in the face of increasing world stocks caused price recessions in the third quarter of 1927, and at this point consumers began buying heavily, foreseeing a 1928 decline in world stocks if restriction continued unchanged as appeared likely

after the November 1, 1927, announcement of the British Colonial Secretary. Continued heavy buying caused a sharp price increase toward the end of 1927 and at the same time left consumers well supplied. When it was announced early in 1928 that restriction would be abolished the price dropped to the lowest level since 1922.

Restriction of Rubber Exports.

Overexpansion of rubber plantations from 1910 to 1915, caused by the high profits made by rubber producers during that period, brought about heavily increased yields after 1919. The decline in rubber consumption during the world trade slump in 1920–21, which was intensified by the change from fabric to cord tires in 1921–22, caused a period of overproduction of rubber, resulting in abnormally low prices for the commodity in 1921 and 1922.

As a temporary measure of relief to the producing industry the British Government adopted recommendations restricting the exportation of rubber from British Malaya and Ceylon, the expressed purpose being to stabilize the price of rubber between 1s. 3d. (30 cents) and 1s. 6d. (36 cents) per pound. The production capacity of each rubber estate in the restriction area was assessed, and beginning November 1, 1922, the exportation of rubber in excess of specified percentages of the assessed production capacity was subject to prohibitive export duties. For the first restriction quarter (November 1, 1922, to January 31, 1923) 60 per cent of the assessed production capacity was exportable. Thereafter the percentage exportable was regulated in accordance with the average price in the London market, the percentage increasing or decreasing in relation to the "pivotal price" of 36 cents until May 1, 1926, when the "pivotal price" was increased to 42 cents. Table 8 shows the average London market price (in pence per pound) for standard quality ribbed smoked sheet rubber for each restriction quarter compared with the percentage allowed to be exported during each quarter.

Table 8.—Percentages of Rubber Exports Permitted in Restricted Areas and London Market Prices for Rubber

Quarter ended—	1923		1924		1925		1926		1927	
	Per cent exportable	Average price	Per cent exportable	Average price	Per cent exportable	Average price	Per cent exportable	Average price	Per cent exportable	Average price
		Pence		*Pence*		*Pence*		*Pence*		*Pence*
Jan. 31	60	14.285	60	14.175	50	17.998	85	46.709	80	19.265
Apr. 30	60	16.858	60	12.917	55	19.356	100	28.013	70	19.696
July 31	65	14.242	60	10.974	65	38.469	100	21.002	60	18.165
Oct. 31	60	14.994	55	14.632	75	43.269	100	20.199	60	16.620

Source: The Rubber Growers Association.

The low percentage exportable at most periods indicates that large quantities of rubber were held off the market through restriction, while the prices in 1924, 1925, and the first half of 1926 show that the scheme failed to bring the desired market stability.

Since May 1, 1927, producers in the restriction area have been allowed to export only 60 per cent of their production capacity. World stocks continued to increase during 1927, and steps were therefore taken by restriction authorities to reduce exports further by lowering the assessments for individual estates during the year beginning November 1, 1927. This met with disfavor from many producers. On February 9, 1928, the British Prime Minister announced that restriction was to be reviewed to determine whether it should be continued, modified, or removed, and on April 4, 1928, announced in Parliament that the restrictions on rubber exports would be removed November 1, 1928.

THE RUBBER-MANUFACTURING INDUSTRY

Position of the Industry.

The United States has a larger rubber-manufacturing industry than all other countries combined, our 1927 net imports of crude rubber—403,371 long tons—being about 66 per cent of the total estimated world production for that year. This huge demand for rubber is the result of the fact that American automotive development is in advance of other countries, about three-fourths of the world's automobiles being in the United States.

The rapid growth of the rubber industry, as reported by the Bureau of the Census, is shown in Table 9. The value of products in 1923 was 36 per cent greater than in 1921; in 1925 it increased over 1923 by 31 per cent, principally as a result of the increase of over $200,000,000 in the cost of materials. For the rubber tire branch of the industry, the value of products in 1925 was $925,000,000, an increase of about 44 per cent over the value two years before. The decline in the number of establishments in the tire branch, from 160 to 126, indicates the tendency toward centralization of tire manufacturing; there was also a decline in the number of establishments classified in the boot and shoe industry, while for other products the number of plants showed a net increase.

Consumption of Crude Rubber.

Statistics showing consumption of crude rubber in manufactures, prepared by the Rubber Association of America, represent a slightly varying percentage of the industry for different periods covered, but are indicative of the general trend. In 1927 the consumption of crude rubber as thus reported was 767,706,000 pounds, an increase of 29,084,000 pounds over the total for 1926. (Table 10.)

Table 9.—The Rubber Industry [1]

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of material	Value of product	Value added by manufacture
The industry as a whole:							
1899	301	36,566	70,536	$15,426,573	$60,240,559	$99,880,693	$39,640,134
1909	267	49,264	121,721	25,136,976	122,745,102	197,394,638	74,649,536
1914	342	74,022	199,242	44,167,402	163,034,713	300,993,796	137,959,083
1919	477	158,549	429,273	193,763,089	594,343,590	1,138,216,019	543,872,429
1921	496	103,273	[2]	123,612,873	377,879,372	704,903,133	327,023,761
1923	529	137,868	605,634	182,084,056	501,162,768	958,517,634	457,354,866
1925	498	141,121	656,857	190,562,920	718,840,524	1,255,414,112	536,573,588
Boots and shoes, rubber:							
1914	23	18,687	24,561	9,986,454	23,956,036	53,822,123	29,866,087
1919	25	32,875	49,400	30,882,722	50,346,880	116,917,434	66,570,554
1921	24	23,888	[2]	23,428,115	32,132,942	94,032,524	61,899,582
1923	25	29,435	56,184	33,670,810	45,268,988	131,739,742	86,470,754
1925	23	24,999	59,413	28,057,948	40,566,085	115,934,554	75,368,469
Tires and inner tubes, rubber: [3]							
1921	178	55,496	[2]	75,054,148	291,554,377	496,123,335	204,568,958
1923	160	73,963	370,551	108,623,102	365,165,016	644,193,697	279,028,681
1925	126	81,640	403,227	120,614,081	559,939,811	925,001,520	365,061,709
Rubber goods, not elsewhere classified: [4]							
1921	294	23,889	[2]	25,130,610	54,192,053	114,747,274	60,555,221
1923	344	34,470	178,899	39,790,144	90,728,764	182,584,195	91,855,431
1925	349	34,482	194,217	41,890,891	118,334,628	214,478,038	96,143,410

[1] Figures are not strictly comparable for censuses prior to 1909.
[2] Not called for in schedule for 1921.
[3] Not separately classified prior to 1921.
[4] Figures for this group prior to 1921 are not comparable.
Source: Bureau of the Census.

Table 10.—Consumption of Crude Rubber and Value of Output by Classes of Products

[In thousand of pounds or dollars]

Product	Consumption of crude rubber				Value of products			
	1924	1925	1926	1927	1924	1925	1926	1927
Grand total	**675,983**	**792,676**	**738,622**	**767,706**	**892,720**	**1,142,096**	**1,206,022**	**1,113,380**
Tires and tire sundries	**563,723**	**665,249**	**630,909**	**652,257**	**598,416**	**803,659**	**866,795**	**785,419**
Automobile casings	408,370	478,742	469,992	499,876	467,361	618,266	680,026	624,746
Automobile tubes	111,176	131,716	113,362	106,411	83,408	117,631	121,891	99,567
Motor-cycle tires (casings and tubes)	804	909	712	903	1,389	2,189	2,083	2,128
Bicycle tires and tubes	1,516	1,817	1,691	1,613	3,255	3,011	2,860	2,470
Other casings and tubes	[1]	[1]	[1]	67	335	450	425	839
Solid and cushion tires for automobiles	34,601	41,355	33,764	30,614	27,672	40,842	36,098	33,190
Other solid tires	710	1,033	732	836	516	1,440	898	1,032
Sundries and repair materials	6,514	9,675	10,656	11,937	14,480	19,830	22,514	21,447
Other rubber products	**112,260**	**127,427**	**107,713**	**115,450**	**294,304**	**338,437**	**339,227**	**327,961**
Mechanical rubber goods	32,133	41,998	33,925	34,975	74,537	102,607	98,258	98,273
Boots and shoes	30,970	29,575	31,909	37,014	108,590	100,675	114,594	103,892
Insulated wire and insulating compound	6,440	7,170	6,825	7,797	30,214	33,379	35,487	34,075
Druggists' rubber sundries	5,432	5,286	4,731	5,219	12,702	13,711	12,931	14,048
Proofed goods	6,283	5,943	5,613	9,054	20,270	21,754	22,662	27,383
Hard-rubber goods	6,332	5,589	2,547	1,572	10,729	12,719	10,355	8,073
Heels and soles	12,965	18,341	9,659	8,785	19,893	27,565	18,373	19,616
Rubber flooring	----------	[2] 1,481	1,942	2,065	----------	[2] 2,971	4,241	4,884
Miscellaneous, not included above	11,704	12,044	10,562	8,967	17,369	23,056	22,326	17,717

[1] Data for year not available.
[2] Last 9 months only.
Source: Rubber Association of America (Inc.).

The consumption of crude rubber in the first two quarters of 1927 was greater than in the corresponding quarters of 1926, while the consumption of crude rubber in the third and fourth quarters of 1927 registered a decline from the figures for the third and fourth quarters of 1926. (Table 11.) These statistics indicate the actual conditions in the industry. There was a lower production in the last six months of 1927 than in the preceding year.

Table 11.—Quarterly Consumption of Crude Rubber in Different Classes of Products

[In thousands of pounds]

Product	1926				1927			
	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.
Grand total	**194, 336**	**179, 514**	**193, 290**	**171, 483**	**204, 465**	**212, 762**	**183, 844**	**166, 636**
Tires and tire sundries	**163, 701**	**153, 534**	**168, 318**	**145, 356**	**176, 012**	**185, 132**	**155, 387**	**135, 726**
Automobile casings	120, 716	114, 787	126, 298	108, 192	135, 921	140, 728	119, 636	103, 591
Automobile tubes	30, 650	27, 861	29, 736	25, 115	28, 235	30, 894	24, 667	22, 615
Other casings and tubes	620	533	560	690	614	616	567	786
Solid and cushion tires for automobiles	9, 643	7, 573	8, 292	8, 254	7, 715	9, 692	7, 237	5, 970
Other solid tires, tire sundries, and repair materials	2, 072	2, 780	3, 432	3, 105	3, 528	3, 201	3, 279	2, 764
Other rubber products	**30, 634**	**25, 980**	**24, 972**	**26, 127**	**28, 452**	**27, 630**	**28, 457**	**30, 910**
Mechanical rubber goods	9, 124	7, 860	8, 873	8, 068	9, 061	8, 967	8, 344	8, 604
Boots and shoes	8, 570	8, 626	6, 485	8, 228	9, 072	8, 418	9, 137	10, 387
Insulated wire and insulating compounds	2, 220	1, 525	1, 546	1, 534	2, 229	1, 732	1, 801	2, 036
Druggists' rubber sundries	1, 342	1, 116	921	1, 353	1, 263	1, 048	1, 351	1, 557
Proofed goods	1, 348	1, 207	1, 391	1, 667	1, 852	2, 088	2, 560	2, 554
Heels and soles	3, 595	2, 397	1, 617	2, 050	1, 982	1, 913	2, 157	2, 733
Miscellaneous not included above	4, 435	3, 248	4, 140	3, 228	2, 993	3, 465	3, 107	3, 040

Source: Rubber Association of America (Inc.).

Almost two-thirds of the crude rubber consumed in the United States is used in automobile casings, the percentages being 63.6 in 1926 and 65.1 in 1927. Inner tubes for automobiles used 15.3 per cent in 1926 and 14.9 per cent in 1927. The relative consumption of crude rubber for automobile solid tires has declined steadily from 7.3 per cent in 1922 to 4 per cent in 1927. In the aggregate, tires and tire sundries used about 85 per cent of the rubber consumed in the United States in 1927.

Consumption of rubber in mechanical rubber goods, while not varying much in actual quantity from 1922 to 1927, dropped from 6.1 per cent of the total to 4.6 per cent. The proportion of the aggregate consumed in rubber boots and shoes, which declined from 5.9 per cent in 1923 to 3.7 per cent in 1925, increased to 4.3 per cent in 1926 and to 4.8 per cent in 1927. The 1927 consumption for rubber heels and soles declined slightly from that of 1926, the percentages for the last three years being 2.3 for 1925, 1.3 for 1926, and 1.1 for 1927. These decreases, especially the precipitate decrease

of 1926 from 1925, probably were caused by greatly decreased production of crêpe rubber soles, which ceased to be competitive on account of the high rubber prices. The 1927 consumption of rubber for tire sundries and repair materials was slightly above that for 1926.

Monthly Variations in Rubber Consumption.

It is difficult to state what is the normal tendency in monthly rubber consumption, but a careful analysis of statistics for the 1923–1927 five-year period shows that consumption has usually been at a peak during February and March, has continued at a high rate during April and May, has dropped in June and reached a low point in July, has increased somewhat in August and again in September, has declined in each succeeding month until the end of the year, and has increased again in January toward the February peak. The seasonal trend of rubber consumption reflects closely the seasonal trend of the demand for automobile tires, the chief product of the industry. Stocks of rubber are usually accumulated during the closing months of the year and are lowest during the third quarter of the year.

In 1927 consumption of rubber in finished goods was high and steady during January and February, rose to a peak in March, eased off slowly in the next four months, rose in August to the second highest peak of the year, and fell to the lowest point in December. Large manufacturers' inventories of tires caused reduced manufacturing activity in the second quarter of 1927, while a decrease in automobile production accounted for the low rubber consumption at the end of the year.

Value of Output of Rubber Products.

The total value of the output of the rubber industry in 1927 was slightly less than that for 1925 or 1926, although greater than in 1924; tire price reductions were directly responsible for this condition. The total 1927 value, as reported by the Rubber Association of America, was $1,113,380,000, which compares with $1,206,022,000 for 1926, $1,142,096,000 for 1925, and $892,720,000 for 1924. The more comprehensive census returns (Table 9) show the total 1925 value of products at $1,255,414,000.

Production and Stocks of Casings, Tubes, and Solid Tires.

The Bureau of the Census has reported the total production of tires and tubes in recent census years. (Table 12.) The 1925 output of pneumatic casings was 58,784,000, an increase of 29 per cent as compared with 1923. The increase in pneumatic inner tubes was relatively a little greater, about 35 per cent.

Table 12.—Census Statistics of Production of Automobile Tires

Year	Pneumatic casings		Pneumatic inner tubes		Solid tires	
	Number	Value	Number	Value	Number	Value
1914	8,021,000	$105,679,000	7,907,000	$20,101,000	(1)	$13,736,000
1919	32,836,000	603,896,000	33,255,000	81,313,000	1,455,000	43,917,000
1921	27,298,000	377,829,000	32,082,000	52,858,000	401,000	14,736,000
1923	45,426,000	458,108,000	57,229,000	74,983,000	944,000	29,061,000
1925	58,784,000	656,492,000	77,388,000	118,235,000	1,035,000	43,870,000

[1] Number of solid tires not reported for 1914.
Source: Bureau of the Census.

Since 1920 the Rubber Association of America has published monthly figures of production of automobile tires and inner tubes, which are shown in Table 14 and Chart II. The association estimates that its figures for casings and tubes cover approximately 75 per cent of the national output. The number of inner tubes made is ordinarily larger than that of casings. The annual production figures show that the ratio of inner tubes to casings was 1.23 in 1921, that this ratio increased annually to 1.37 in 1924 and 1925, but dropped to 1.25 in 1926 and 1.09 in 1927. (Table 13.) There has been a notable reduction in the relative consumption of inner tubes during the past two years, owing to the lower inflation pressure for balloon tires, less frequent punctures, and more common repair of inner tubes when injured.

Table 13.—Production, Shipments, and Stocks of Pneumatic Casings, Inner Tubes, and Solid Tires

NOTE.—See text as to proportion of total national output covered by these statistics.

[In thousands]

Year	Production			Shipments			Stocks, end of year		
	Casings	Inner tubes	Solid tires	Casings	Inner tubes	Solid tires	Casings	Inner tubes	Solid tires
1921	21,857	27,127	428	23,384	27,847	555	3,775	4,771	169
1922	30,874	38,267	796	30,199	37,361	733	4,638	5,771	245
1923	34,116	45,219	712	33,429	44,417	754	4,372	6,363	180
1924	38,804	53,094	699	37,666	51,094	688	5,591	8,313	194
1925	45,729	62,047	783	44,635	60,816	823	6,119	8,495	150
1926	46,177	57,514	578	44,317	53,729	558	7,856	12,165	168
1927	48,536	52,696	572	48,217	54,754	571	7,734	10,297	161

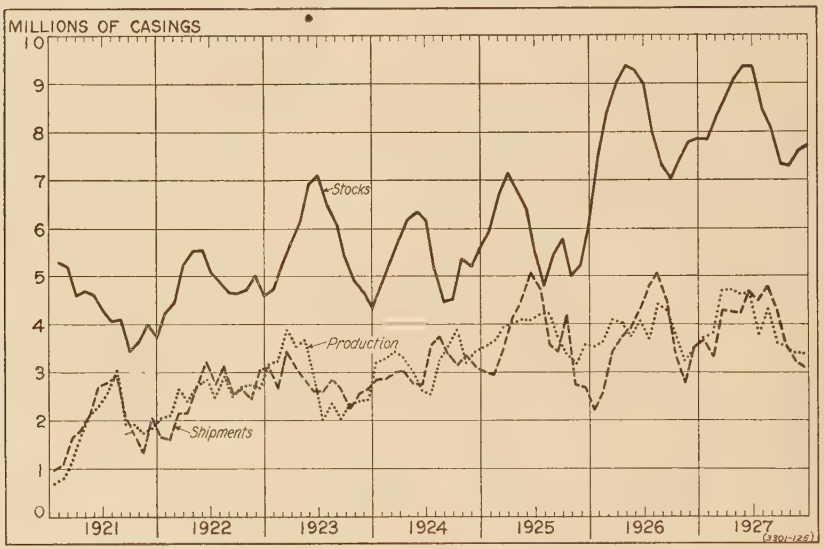
Source: Rubber Association of America (Inc.).

The months of lowest production of automobile casings in 1927 were November and December. The peak month was April, but March production was almost as large. Dealer shipments fell off in the late months of 1927, owing to the seasonal trend. Increased mileage has resulted from the greater use of balloon tires. A survey

of dealers' stocks of tires on April 1, 1928, showed a higher average number of casings per dealer on hand than at the corresponding date in the three previous years.

The sharp drop in production of automobiles at the end of 1927 was reflected in tire-production schedules during the last four months of the year. Shipments of casings to car manufacturers, described as original equipment sales, constituted 27 per cent of total reported shipments in 1922, 37 per cent in 1923, 28 per cent in 1924, 30.6

Chart II.—PRODUCTION, SHIPMENTS, AND STOCKS OF PNEUMATIC CASINGS



per cent in 1925, 30.8 per cent in 1926, and 23.6 per cent in 1927. Tire manufacturers' stocks were smaller by 112,000 casings, 1,868,000 inner tubes, and 7,000 solid tires at the end of 1927 than at the beginning of the year.

Table 14.—Production of Pneumatic Casings and Inner Tubes, by Months

NOTE.—See text as to proportion of total national output covered by these statistics.

Month	Casings (thousands)						Inner tubes (thousands)					
	1921	1923	1924	1925	1926	1927	1921	1923	1924	1925	1926	1927
Total	21,857	34,116	38,804	45,729	46,177	48,536	27,127	45,219	53,094	62,047	57,514	52,696
January	703	3,139	3,225	3,560	3,548	3,731	741	3,962	3,890	4,761	5,110	4,007
February	820	3,236	3,284	3,687	3,657	3,834	917	4,055	4,070	4,758	5,123	3,725
March	1,163	3,891	3,433	3,964	4,099	4,727	1,346	4,893	4,223	5,254	5,275	5,395
April	1,653	3,563	3,315	4,012	4,014	4,742	1,763	4,275	4,041	5,158	4,918	5,536
May	2,102	3,685	3,048	4,106	3,771	4,629	2,211	4,339	3,755	5,138	4,615	5,060
June	2,314	2,980	2,638	4,072	4,072	4,678	2,360	3,606	3,501	5,215	4,633	4,742
July	2,572	2,005	2,559	4,199	3,718	3,835	3,021	2,636	3,863	5,666	4,301	3,971
August	3,046	2,368	3,241	4,214	4,411	4,334	4,431	3,586	5,024	5,718	5,572	4,871
September	1,932	2,036	3,539	3,764	4,286	3,638	3,276	3,262	5,512	5,454	5,698	4,247
October	1,933	2,367	3,882	3,389	3,833	3,603	2,848	3,861	5,902	4,966	4,665	3,809
November	1,768	2,405	3,196	3,181	3,250	3,394	2,135	3,453	4,605	4,708	3,644	3,593
December	1,850	2,441	3,444	3,579	3,520	3,391	2,079	3,290	4,707	5,253	3,961	3,742

Source: Rubber Association of America (Inc.).

Types of Tires Produced.

In 1922 only high-pressure tires were manufactured and over 50 per cent of the total produced were fabric tires. In 1927 (Table 15) only 1.6 per cent of the tires made were fabrics, while the proportion of cord tires advanced to 98 per cent. Production of balloon tires, begun late in 1923, has steadily increased, the percentage of total production reaching 47 per cent in 1926 and 54 per cent in 1927. About 207,000 tires were manufactured in metric sizes for export, principally to European markets. The fabric tire is rapidly becoming obsolete in America. The present trend indicates increasing concentration on the balloon tire, which is essentially a straight-side tire. Elimination of balloon type tires for regular size rims and fabric tires is gradually taking place, and the clincher type is being displaced by the straight side.

Tire manufacturers favor standardization of tire sizes in order to reduce the heavy mold equipment requirements for so many different sizes and types of tires. Changes from fabric to cord tires, from clincher to straight-side tires, and from high-pressure to balloon tires have occurred during the past seven years, and while resulting in greater durability of tires and greater comfort to motorists these changes have kept the tire manufacturing industry constantly in the market for expensive mold equipment. As old cars are superseded by new models the necessity for continued production of obsolete tire sizes will gradually disappear. Concentration on balloon tires is a healthy development, and limitation of balloon-tire sizes is also recognized as desirable.

Table 15.—Production of Various Types of Automobile Casings

[In thousands]

Type	1923	1924	1925	1926	1927	Per cent of total	
						1926	1927
Total	**34,116**	**38,807**	**45,729**	**46,277**	**48,538**	**100.0**	**100.0**
Cord tires, inch sizes, total	19,489	27,230	39,199	43,724	47,564	94.5	98.0
Clincher, high pressure, regular	6,872	10,706	13,667	13,103	12,759	28.3	26.3
Straight side, high pressure, regular	12,617	12,312	7,321	5,784	5,093	12.5	10.5
Heavy duty and 20-inch, high pressure	(1)	(1)	2,643	2,913	3,675	6.3	7.6
Balloon, for 18, 19, 20, 21, and 22 inch rims		[2] 3,164	14,501	21,512	25,549	46.5	52.6
Balloon type for regular size rims		[2] 1,047	1,067	413	488	.9	1.0
Fabric tires, inch sizes	14,455	11,498	6,434	2,480	767	5.3	1.6
Millimeter sizes, for export	172	79	96	73	207	.2	.4

[1] Included with regular sizes.
[2] Figures represent last nine months of 1924. Very few manufactured previously.
Source: Rubber Association of America (Inc.).

Output of Other Rubber Products.

Consumption of crude rubber in mechanical rubber goods (belting, hose, and packing) amounted to 34,976,000 pounds in 1927, which was 3 per cent more than in 1926 but 17 per cent less than the peak

consumption of 1925. These figures indicate that an increasing amount of reclaimed rubber has been used in the manufacture of mechanical rubber goods during the past two years.

The total value of rubber boots and shoes produced in 1927 was only $103,892,000, which was smaller than in any other recent year, except 1922 and 1925. The total value of production of heels and soles amounted to $19,616,000 in 1927, compared with $18,373,000 in 1926; and the consumption of rubber in heels and soles declined from 9,659,000 pounds in 1926 to 8,785,000 pounds in 1927.

Although the consumption of crude rubber for insulated wire and insulating compounds increased from 6,825,000 pounds in 1926 to 7,797,000 pounds in 1927, the total value of products decreased from $35,487,000 to $34,075,000. (Table 10.) The 1927 consumption of crude rubber in hard-rubber goods registered a decline of 72 per cent from the amount in 1925, while the value of products declined from $12,719,000 in 1925 to $8,073,000 in 1927. In all these classes reclaimed rubber has been used particularly to replace crude rubber during both 1926 and 1927. Manufacturing output of druggists' rubber sundries was greater in 1927 than 1926, as evidenced by an increase in consumption of crude rubber from 4,731,000 pounds to 5,219,000 pounds and an increase in value of products from $12,931,000 to $14,048,000. The consumption of crude rubber for proofed goods increased 61 per cent in 1927 over 1926 and the value of the products increased 21 per cent.

Increased Use of Reclaimed Rubber.

Reclaimed rubber finds a wide use in the manufacture of hose and packings, mats and matting, footwear, heels, and soles, insulating compounds and hard-rubber goods, and can be used to some extent in a great many products. During the period of relatively low-priced crude rubber, from 1921 to 1924, manufacturers often used crude rubber when reclaimed rubber would have served the purpose; with the abnormally high prices of crude rubber in 1925, the advantage of reclaimed rubber became pronounced, and there was a resultant heavy increase in its use. Statistics, admittedly incomplete, of the Rubber Association of America indicate that in 1917, a year when supplies of crude rubber were difficult to obtain because of war conditions, 57 per cent as much reclaimed rubber was used as crude rubber. The ratio declined to 19 per cent in 1922, and was only 25 per cent in 1923 and 1924, but increased to 35 per cent in 1925.

A detailed survey made in 1926, estimated to have been practically complete, showed that 180,000 long tons of reclaimed rubber were produced and 164,500 long tons were consumed. The ratio of reclaimed rubber to crude rubber consumed in 1926 was 45 per cent, the highest since 1917. The survey showed that in the manufacture

of rubber tires and tubes the ratio of reclaimed to crude consumed was 20 per cent and that in the manufacture of other rubber products the ratio was 177 per cent. The annual production capacity of reclaiming plants at the end of 1926 was reported as 228,000 long tons. The 1927 consumption of reclaimed rubber is estimated to have reached about 175,000 tons.

Price Trend of Rubber Products.

The general trend of wholesale tire prices, which was downward from 1920 to 1924, turned sharply upward in 1925, during which year five general increases were made effective. In February, July, and November of 1926 tire prices were reduced until the average wholesale price for four common sizes was lower than before the price increases of 1925. Tire prices were further reduced by 5 per cent on November 1, 1927, bringing them to the lowest level in the history of the industry. The relatively low price of crude rubber was an important factor in keeping tire prices down from 1922 to 1924, but manufacturing and other economies were instituted during this period which enabled manufacturers to keep prices of tires stable for a considerable time in the face of mounting crude-rubber costs. The advances in prices of tires in 1925 and the decreases in 1926 were largely a result of changes in the price of crude rubber, while the reduction in 1927 was caused primarily by intense competition.

Prices of other rubber products also moved upward during 1925; fine rubber goods, such as druggists' sundries, toy balloons, and gum-rubber specialties, reacted most rapidly to the advance in price of crude rubber. During 1926 and 1927 prices of these products followed the decline in price of crude rubber.

Prices of mechanical rubber goods and rubber footwear were not so erratic as those for fine rubber goods, but decreased to generally lower levels at the end of 1927 than at the beginning. The demand for different types of rubber footwear is largely seasonal.

FOREIGN TRADE IN RUBBER PRODUCTS

Record Year for Export Trade.

The total value of United States exports of rubber products in 1927 was $69,593,000, compared with $60,051,000 in 1926 and $52,630,000 in 1925. This large 1927 increase in value was due to greater quantities shipped, principally in automobile casings and inner tubes, as prices of rubber products generally declined. In quantity the exports of rubber belting (see also Table 18), hose, and packing registered an increase in 1927 over 1926, as did exports of rubber heels and soles and rubber thread. Exports of rubber footwear, on the other hand, declined in 1927; they aggregated 7,574,000 pairs, which was 5 per cent less than in 1926. The steady increase in exports of reclaimed rubber and scrap and old rubber is also of interest.

Table 16.—Exports of Rubber Products

Product	Quantity (thousands of units specified)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Total					40,622	52,630	60,051	69,593
Rubber, reclaimed—pounds	5,458	10,240	12,076	19,130	524	1,067	1,425	1,751
Rubber, scrap and old—do	21,452	30,951	29,843	31,332	839	1,616	1,947	1,946
Footwear:								
Rubber boots—pair	680	907	1,013	874	1,592	2,091	2,372	2,074
Rubber shoes—do	1,681	1,106	1,486	1,911	1,375	985	1,452	1,709
Canvas rubber-soled shoes—do	3,918	4,642	5,469	4,789	2,962	3,291	3,969	3,289
Casings for automobiles—number	1,250	1,628	1,497	2,631	15,063	21,056	24,359	33,787
Tubes for automobiles—do	1,104	1,475	1,127	1,631	2,021	2,975	3,024	3,499
Solid tires for automobiles and motor trucks—number	103	113	98	97	2,691	3,180	3,458	2,887
Tire rubber accessories and repair materials—pounds	1,315	2,455	(1)	(1)	521	1,104	1,612	1,833
Druggists' rubber sundries					1,298	1,665	1,272	1,251
Hard-rubber goods—pounds	1,000	1,689	(1)	(1)	819	953	682	697
Belting—do	3,572	4,079	4,173	5,010	2,089	2,425	2,657	2,682
Hose—do	4,423	5,349	6,125	7,118	1,729	2,098	2,523	2,671
Packing—do	1,855	1,915	2,149	2,415	838	881	1,097	1,109
Heels and soles—do	2,511	3,392	4,277	4,922	823	1,059	1,363	1,526
Thread—do	1,240	1,517	1,460	1,526	1,379	1,816	1,958	1,906
Other rubber manufactures					[2] 4,059	[2] 4,370	[2] 4,881	[2] 4,974

[1] Quantity not available.
[2] For 1924 includes rubber toys, balls, and balloons, valued at $980,578; for 1925, $1,289,229; for 1926, $846,072; and for 1927, $935,245.

Source: Bureau of Foreign and Domestic Commerce.

Table 17.—Value of Exports of Rubber Products

[In thousands of dollars]

Year [1]	Total	Tires and tubes	Footwear	Mechanicals	Reclaimed and scrap	All other
1901	5,119	(2)	2,183	566	642	1,728
1902	6,627	(2)	3,641	634	570	1,782
1903	6,981	(2)	3,363	820	498	2,300
1904	7,460	(2)	3,397	880	713	2,470
1905	5,508	(2)	1,214	994	728	2,572
1906	6,544	(2)	1,505	1,221	852	2,966
1907	7,428	(2)	1,232	1,253	1,214	3,730
1908	7,574	(2)	1,614	1,348	869	3,743
1909	7,433	(2)	1,292	1,498	818	3,824
1910	10,176	(2)	1,985	1,961	1,115	5,115
1911	12,452	2,677	2,219	2,163	1,506	3,887
1912	12,823	3,205	1,503	2,315	1,656	4,144
1913	14,324	4,554	1,438	2,606	1,813	3,913
1914	12,439	4,068	1,113	2,373	1,432	3,453
1915	14,766	5,540	2,781	1,808	1,114	3,525
1916	35,152	20,939	2,665	2,987	1,271	7,290
1917	31,105	14,878	3,199	3,532	1,230	8,266
1918	33,343	15,109	5,774	4,578	803	7,079
1919	53,864	30,482	5,265	6,100	1,649	10,369
1920	85,437	53,075	10,750	8,398	1,617	11,597
1921	30,786	16,313	3,397	4,107	579	6,391
1922	34,009	20,393	3,740	3,156	557	6,162
1923	36,972	19,961	4,772	4,498	1,089	6,651
1924	[3] 40,622	20,301	5,929	4,656	1,363	[3] 8,373
1925	[3] 52,630	27,899	6,367	5,404	2,683	[3] 10,277
1926	[3] 60,051	31,562	7,792	6,277	3,372	[3] 11,048
1927	[3] 69,593	40,785	7,073	6,462	3,698	[3] 11,576

[1] Fiscal years to and including 1918, calendar years thereafter.
[2] Included with "All other" prior to 1911.
[3] Includes the value of rubber toys, balls, and balloons as follows: For 1924, $980,578; 1925, $1,289,229; for 1926, $846,072; and for 1927, $935,245.

Source: Bureau of Foreign and Domestic Commerce.

Growth of Rubber Export Trade.

The total value of exports increased almost steadily from about $5,000,000 in 1901 to about $15,000,000 in 1915. (Table 17.) A much more rapid development occurred in the following years, as the total value of exports increased from $35,152,000 in 1916 to the high record of $85,437,000 in 1920. The war, which brought foreign orders to America, also was responsible for very high prices of finished goods, and the quantities exported did not keep pace with the inflated values. The 1921 slump reduced the total value of our rubber-goods exports to $30,786,000, but since then it has more than doubled, reaching the total of $69,593,000 in 1927.

Table 18.—Exports of Automobile Casings, Rubber Belting, and Rubber-Soled Canvas Shoes, by Countries of Destination

[All value figures in thousands of dollars; quantities in thousands of casings, thousands of pounds of belting, and thousands of pairs of shoes]

Country	Casings								Belting		Canvas rubber-soled shoes	
	Quantity				Value				Quantity	Value	Quantity	Value
	1924	1925	1926	1927	1924	1925	1926	1927	1927	1927	1927	1927
Total	**1,250**	**1,628**	**1,497**	**2,631**	**15,063**	**21,056**	**24,359**	**33,787**	**5,010**	**2,682**	**4,789**	**3,289**
Belgium	15	23	15	29	219	452	338	411	100	51	4	4
Denmark	58	86	45	126	601	865	567	1,387	126	69	85	61
France	12	27	16	24	171	465	322	362	83	48	2	2
Germany	2	11	81	159	29	305	1,622	2,296	57	30	15	17
Greece	4	12	8	20	55	178	130	266	5	3	(1)	(1)
Italy	9	6	4	44	100	68	84	520	20	12	17	13
Netherlands	18	30	24	56	238	487	538	937	20	10	2	2
Norway	18	22	16	18	242	351	346	314	30	16	40	28
Spain	10	27	39	99	183	414	676	1,283	46	18	12	9
Sweden	52	56	41	81	712	961	806	1,196	158	79	13	10
United Kingdom	176	185	152	209	1,969	2,195	2,516	2,708	452	266	297	196
Canada	50	21	15	24	556	345	257	342	216	116	73	68
Mexico	91	88	80	95	989	1,058	1,079	1,055	425	229	195	150
Cuba	87	87	114	135	969	961	1,354	1,321	140	75	971	537
Argentina	113	178	201	305	1,291	2,022	2,818	3,254	212	130	542	294
Brazil	37	92	78	157	329	923	944	1,773	365	204	17	10
Chile	11	20	17	31	181	371	348	520	618	303	79	52
Colombia	9	13	18	28	135	233	416	531	32	20	220	142
Peru	22	17	13	20	346	301	322	359	72	44	9	6
Uruguay	20	34	29	33	233	398	421	385	28	22	62	41
Venezuela	16	25	20	27	203	362	461	456	17	12	4	3
British India	17	34	32	80	198	378	449	1,036	123	79	420	323
British Malaya [2]	12	24	15	46	131	222	196	416	31	12	89	62
China, Hong Kong, Kwantung	9	17	21	25	100	208	317	286	48	21	94	77
Netherland East Indies	22	31	30	62	234	360	465	714	76	44	16	13
Japan	70	82	79	81	734	824	882	753	136	55	(1)	(1)
Philippine Islands	53	72	58	112	628	751	834	1,394	162	94	781	615
Australia	68	77	47	88	969	1,253	1,185	1,368	276	126	41	43
New Zealand	44	60	15	10	634	814	329	142	10	8	3	4
British Africa	32	34	22	53	436	426	375	793	412	188	57	49
Other countries	95	137	151	352	1,249	2,106	2,964	5,209	515	298	628	459

[1] Less than 500.
[2] Straits Settlements prior to 1926.
Source: Bureau of Foreign and Domestic Commerce.

American Rubber Exports Widely Distributed.

American exports of rubber products are distributed throughout the world. (Table 18.) The dominant share of the total trade in rubber products in Latin America is obtained by American manufacturers, and exports even to other rubber-manufacturing countries—the United Kingdom, Canada, Japan, Australia, Germany, and France—are fairly large. About the only part of the world where American exporters did not secure a representative share of the trade in rubber products in 1927 was Africa—particularly French Africa and British West Africa. Other markets apparently capable of further development include Egypt, Turkey, French Indo-China, and various European countries. In order to develop business with any of these markets, exporters must be prepared to meet strong competition from European manufacturers, and in the French colonies and certain of the British possessions the tariff preferences favoring French or British Empire products make price competition from American companies very difficult.

Tables comparing the exports of automobile casings, rubber boots and shoes, rubber belting, and rubber hose, from all the countries which export important quantities of these products, appear in Volume II of the Commerce Yearbook. Exports of automobile casings from all countries in 1927 amounted to 8,836,000, as compared to 6,872,000 in 1926; the United States share of this trade increased from 24 per cent in 1926 to 32 per cent in 1927.

Imports of Rubber Products.

The United States imports of rubber products are relatively of little importance. The chief classes imported are golf balls, rubber and balata belting, hard-rubber goods, and some druggists' rubber sundries.

Golf ball imports in 1927, mostly from the United Kingdom, numbered 3,059,844, valued at $1,234,137, a decrease from 1926. Imports of rubber and balata belting decreased from 731,827 pounds, valued at $488,486 in 1926, to 638,068 pounds, valued at $389,062, in 1927, about 80 per cent coming from the United Kingdom.

Imports of hard-rubber combs, which come mainly from Germany, increased from 200,864 dozen, valued at $111,051, in 1926, to 549,699 dozen, valued at $328,022, in 1927. Imports of other hard-rubber goods in 1927 amounted to 129,104 pounds, valued at $166,695. Tire imports again declined from 17,504 valued at $161,303, in 1926, to 5,450 valued at $75,615, in 1927, and were supplied principally by France and the United Kingdom. Druggists' rubber sundries to the value of $166,691 were imported in 1927, coming very largely from the United Kingdom and Germany.

TEXTILES, CLOTHING, AND FURS

SUMMARY.—The year 1927 proved better than 1926 in the cotton, silk, and rayon manufacturing industries and in most branches of the wearing-apparel industry. Production of hosiery increased, but the knit-goods industry as a whole showed little improvement over 1926, while the wool-manufacturing industry continued to operate below capacity. Activity in the cotton-spinning industry reached 104.9 per cent of its single-shift capacity, while the number of active cotton spindle hours increased 10 per cent in the South and 3.6 per cent in New England as compared with 1926. Raw-wool production in the United States exceeded that of 1926 by 5.7 per cent, and wool consumption of mills representing about three-fourths of the wool-manufacturing industry recorded a gain of 9 per cent. Monthly deliveries of raw silk to the mills averaged 46,948 bales, an increase of 12 per cent over 1926. Rayon production in 1927 was 75,562,000 pounds, or 15 per cent greater than in 1926.

Table 1.—Textiles Summary

[Price of cotton and wool in cents per pound; silk and rayon in dollars per pound; print cloth in cents per yard. All data are for calendar years]

Item	1914	1921	1923	1924	1925	1926	1927
Raw cotton: [1]							
Produced, 1,000 bales	15,906	7,978	10,171	13,639	16,123	17,755	12,778
Exported, 1,000 bales	6,320	6,474	5,279	6,795	8,532	9,048	9,478
Consumed, mills, 1,000 bales	5,449	5,407	6,521	5,522	6,433	6,684	7,407
Spot price, New York	12.1	15.1	29.3	28.7	23.5	17.5	17.6
Number of cotton spindles in place, July 31, thousands	32,744	36,618	37,409	37,804	37,929	37,586	36,696
Cotton spindle hours, millions	[2]	[2]	99,508	80,275	94,600	97,029	104,405
Per cent of single-shift capacity	[2]	[2]	98.9	78.5	92.9	95.4	104.9
Cotton manufactures:							
Production, 1,000 dollars	701,301	1,330,263	2,010,141	[2]	1,819,886	[2]	[2]
Exports, 1,000 dollars	48,211	115,539	136,300	130,808	146,272	128,877	133,293
Imports, 1,000 dollars	60,313	75,430	100,153	90,914	79,271	67,159	66,198
Price of print cloth (27-inch, 64 by 60, 7.60-yard)	3.0	5.1	7.5	6.8	6.6	5.2	5.5
Wool, 1,000 pounds:							
Produced	290,192	283,629	268,196	279,375	292,362	310,576	328,137
Imported	256,501	316,605	388,345	262,655	336,646	299,451	264,430
Price, Ohio ⅜-blood (56's)	26	28	56	57	58	48	46
Per cent activity of machinery: [3]							
Woolen spindles	[2]	72	92	85	84	73	78
Worsted spindles	[2]	82	92	66	66	69	67
Carpet looms	[2]	52	82	66	72	64	64
Wool manufactures:							
Production, 1,000 dollars	464,250	888,558	1,312,719	[2]	1,199,417	[2]	[2]
Exports, 1,000 dollars	12,480	9,903	8,733	7,090	5,873	4,979	5,159
Imports, 1,000 dollars	44,101	51,218	69,118	69,310	73,901	70,667	78,775
Raw silk, imports, 1,000 pounds	25,650	45,355	49,482	51,281	63,764	66,422	74,005
Price, Kansai No. 1	3.69	6.04	8.23	5.92	6.34	5.94	5.10
Silk manufactures:							
Production, 1,000 dollars	254,011	583,419	761,322	[2]	808,979	[2]	[2]
Exports, 1,000 dollars	2,409	9,672	11,136	14,148	18,182	17,788	15,298
Imports, 1,000 dollars	29,960	48,276	44,597	37,699	36,719	40,570	42,158
Rayon, 1,000 pounds:							
Yarns and sheets (excluding fabrics), production	2,445	15,000	36,477	37,720	51,902	65,750	75,562
Imports of rayon yarns	2,527	3,276	3,029	1,954	5,441	9,351	15,679

[1] Data do not include linters, except for exports in which linters are a comparatively small proportion.
[2] Not available.
[3] Based on maximum, single-shift capacity. No comparable figures available for 1914.

Prices of raw cotton showed an upward trend during the first three-quarters of 1927, but declined in the last quarter. Cotton-yarn prices generally moved in sympathy with raw cotton, but cloth prices were fairly steady during the early months of the year, after which they advanced until September; slight recessions occurred in some lines during the remainder of the year. Prices of raw wool declined slightly from February to May, but advanced in the latter half of the year. Silk prices, on the other hand, were lower than at any time since 1916. Rayon prices advanced slightly in the first quarter, but were steady during the remainder of 1927. Wholesale prices of hosiery and underwear declined.

POSITION OF THE TEXTILE INDUSTRIES IN GENERAL

The broad group of textile industries may be divided into three subgroups—industries making or aiding in the manufacture of textile fabrics, those making wearing apparel from purchased fabrics, and those making other commodities from purchased fabrics. Industries in the second and third subgroups use as their principal materials the products of the first subgroup. Moreover, even within a single industry there is sometimes considerable duplication in value of products owing to a similar cause. The principal divisions of the first subgroup, ranked according to value of products, are cotton manufactures, wool manufactures, knit goods, silk manufactures, and manufactures of vegetable fibers (other than cotton and rayon).

Census statistics for 1927 are not yet available, but in 1925 textiles and their products ranked second only to food and kindred products among the 16 general groups of manufacturing industries, from the standpoint of gross value of products, and ranked first in number of wage earners, total wages paid, and in value added to materials by manufacture.

The total value of textiles and their products (which involves much duplication) in 1925 was $9,122,858,000, a decrease of 3.6 per cent as compared with the output for 1923, but an increase of 31 per cent over the value of production in 1921 and of 165 per cent over that reported for 1914, when the cost of raw materials used in the textile industry and the unit values of the finished products were in most cases considerably lower than in 1925. The total for 1925 comprised the following: Textile-mill products, $5,342,617,000; wearing apparel made from purchased fabrics, $3,239,978,000; and other articles made from purchased fabrics, $540,263,000. Compared with production in 1923, these figures represent decreases of 3 per cent and 6 per cent, respectively, for the first two subgroups, but an increase of 10 per cent for the third. The textile and related industries employed 1,627,000 wage earners in 1925, which was 5 per cent less than in 1923, and value added to materials by manufacture was $3,774,808,000, 7 per cent less than two years earlier.

Table 2.—Census Statistics of the Textile Industries

NOTE.—The value of products for the group as a whole, and to some extent also for the subgroups, involves duplication owing to the use of products of one branch as material for another.

Industry	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				In thousands of dollars			
The group as a whole:							
1914	23,364	1,506,197	2,717,369	675,902	2,014,099	3,445,481	1,431,382
1919	28,457	1,610,067	3,248,456	1,481,183	5,379,557	9,211,190	3,831,633
1921	25,960	1,509,789	[1]	1,472,390	3,801,252	6,956,715	3,155,463
1923	26,767	1,715,361	3,783,504	1,743,851	5,394,648	9,462,634	4,067,986
1925	24,433	1,627,141	3,986,136	1,654,013	5,348,050	9,122,858	3,774,808
Textile-mill products:							
1914	5,942	950,880	2,522,862	404,606	1,185,091	1,935,344	750,253
1919	7,143	1,052,327	3,024,486	910,048	3,258,527	5,481,884	2,223,357
1921	7,241	993,557	[1]	896,373	2,136,803	3,896,449	1,759,646
1923	7,816	1,164,638	3,556,440	1,122,751	3,213,272	5,527,557	2,314,285
1925	7,470	1,110,209	3,748,885	1,066,262	3,234,034	5,342,617	2,108,583
Wearing apparel made from purchased fabrics:							
1914	14,953	510,595	117,911	250,114	673,013	1,297,273	624,260
1919	18,778	507,700	131,965	526,955	1,745,931	3,198,147	1,452,216
1921	16,784	473,574	[1]	534,312	1,424,284	2,710,657	1,286,373
1923	16,904	499,413	132,317	568,139	1,852,229	3,443,940	1,591,711
1925	14,862	465,583	119,158	533,924	1,739,376	3,239,978	1,500,602
Other articles made from purchased fabrics:							
1914	2,469	44,722	76,596	21,182	155,995	212,864	56,869
1919	2,536	50,040	92,005	44,180	375,099	531,159	156,060
1921	1,935	42,658	[1]	41,705	240,165	349,609	109,444
1923	2,047	51,310	94,747	52,961	329,147	491,137	161,990
1925	2,101	51,349	118,093	53,827	374,640	540,263	165,623
MAJOR INDUSTRIES, 1925							
Cotton goods	1,366	445,184	2,236,363	353,883	1,077,153	1,714,368	637,215
Knit goods	1,987	186,668	176,630	168,683	453,926	809,960	356,034
Silk manufactures	1,659	132,509	212,609	142,734	484,123	808,979	324,857
Woolen goods	503	67,056	193,080	82,436	219,618	361,524	141,906
Worsted goods	329	98,168	377,215	108,835	400,784	596,266	195,483
Carpets and rugs, wool, other than rag	69	33,886	63,008	43,383	104,196	188,903	84,707
Cordage and twine	118	15,400	77,563	14,019	66,848	100,448	33,600
Dyeing and finishing textiles	697	70,749	252,701	83,983	244,700	432,537	187,837
Clothing, men's (not including custom-made)	4,000	174,332	44,749	203,847	557,471	1,087,238	529,767
Shirts	840	49,864	13,884	35,674	129,754	225,963	96,209
Clothing, women's (not including custom-made)	6,127	126,466	24,316	175,045	724,299	1,293,705	569,406
Millinery and lace goods, n. e. s.[2]	2,443	53,603	11,986	66,551	153,386	309,856	156,471
Bags, other than paper, not made in textile mills	162	11,404	15,295	9,332	150,103	175,082	24,979

[1] Not called for in schedule for 1921.

[2] The production of untrimmed hats for women is covered, in part, by other industry classifications, namely, "hats, fur-felt," "hats, wool-felt," "hats, straw," and "hats and caps, cloth." Custom millinery shops are not included. See also Table 44, page 523.

Source: Bureau of the Census.

Progress in Simplification.

Commodities which are affected by style, art, design, or other expression of individuality are not generally susceptible to simplification, but a number of manufacturers have adopted simplified lines and have been convinced that it pays. If there were more regard for usefulness and economy and less insistence on frequent and extreme variety, manufacturers could operate more economically and merchants would have fewer stocks "go dead" on their hands.

A more sensible or more uniform distribution of demand throughout the year is a problem which depends largely upon the public. In the textile field a simplified-practice recommendation was adopted during 1924 both for cotton and for woolen blankets, and a recommendation has been in effect for more than two years covering a reduction in the number of widths and weights of wide and sail cotton duck.

The textile industry promulgated a third recommendation during 1927, which reduced the varieties of hospital and institutional textiles from 575 to 26. Indicative of the actual worth of these adopted recommendations, a survey conducted during 1927 by the standing committee for the cotton duck simplification showed that 90 per cent of the acceptors, by volume of output, were adhering to the recommendations.

COTTON GOODS

SUMMARY.—Business in the cotton-goods industry during 1927, particularly in the early months of the year, was better than in 1926. Activity in the cotton-spinning industry reached 104.9 per cent of the single-shift capacity, the highest annual average since the compilation of these figures was begun in August, 1921. Compared with 1926, active cotton spindle hours for the United States as a whole registered an increase of 7.6 per cent, and cotton consumption increased 8.2 per cent. The aggregate number of active spindle hours in 1927 for the cotton-growing States exceeded the total of 1926 by 10 per cent, and in New England the aggregate in 1927 was 3.6 per cent higher than in 1926.

Prices of raw cotton fluctuated during the first three quarters of 1927, but the trend was upward until September, after which prices showed a downward tendency. The monthly average of spot prices of middling cotton at New York rose from 13.4 cents in January to 21.8 in September and subsequently declined to 19.6 in December. Yarn prices generally moved in sympathy with prices for raw cotton. Cloth quotations were fairly stable during the first four months of the year, advanced until September; and during the remainder of the year prices on gray goods receded slightly, while quotations on bleached and colored goods were fairly well maintained. Features of the year were the heavy buying of gray goods in the early months and an increase of about 50 per cent over 1926 in the consumption of rayon by fine-goods mills in New England.

Exports of cotton manufactures increased slightly, 3½ per cent in value, while imports showed a small decline as compared with 1926. Exports and imports of cotton cloth (yardage) gained 10 per cent and 4 per cent, respectively, over 1926 totals. Data as to production, prices, and exports of raw cotton are given in the section on agricultural products.

GENERAL POSITION AND CHARACTER

The cotton-manufactures industry comprises three branches—cotton goods, cotton small wares, and cotton lace goods. The cotton-goods branch, by far the most important, embraces mills engaged primarily in any of the processes preparatory to spinning, in spinning, or in the weaving of piece goods. (Manufacturers of cotton knit

goods are not included, being classified in the knit-goods industry.) In the United States the finishing processes of bleaching, dyeing, and printing are carried on mainly in separate plants. While most of the mills spin yarn for their own use, a considerable number also spin yarn for sale to manufacturers of knit goods, small wares, insulated wire, and various other articles. Complete statistics of the cotton-goods industry, as of other textile industries, are secured only by the biennial census of manufactures, the latest available being for 1925.

Census Statistics.

As shown by Table 3, the cotton-goods industry experienced a steady growth from census to census between 1899 and 1919. In the latter year high price levels carried the value of production up to the record figure of $2,125,272,000, although the quantity of woven goods produced fell below the total for 1914. The effect of postwar deflation was reflected in the value of the output for 1921, when the volume of woven goods exceeded that of 1919, but the value of all products dropped off over $800,000,000. In 1923 the industry recovered from the depression of the preceding census year and reported a total production approaching in value and considerably exceeding in quantity that of 1919, when prices were much higher. The output in 1923, however, proved to be greater than the consumptive requirements of the domestic market, with a resulting reduction in activity in 1924 and 1925. The value of production in 1925 declined almost 10 per cent as compared with that of 1923, but the decrease in quantity was somewhat less marked.

Table 3.—The Cotton-Goods Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899 [1]	973	297,929	789,858	$85,126,310	$173,441,390	$332,806,156	$159,364,766
1909 [1]	1,208	371,182	1,286,105	129,789,717	364,013,504	615,217,702	251,204,198
1914	1,179	379,366	1,563,823	146,129,628	431,602,540	676,569,115	244,966,575
1919	1,288	430,966	1,836,298	355,474,937	1,277,785,597	2,125,272,193	847,486,596
1921	1,328	412,058	[2]	328,226,744	707,442,097	1,278,220,831	570,778,734
1923	1,375	471,503	2,153,299	396,602,644	1,147,372,215	1,901,125,703	753,753,488
1925	1,366	445,184	2,236,363	353,882,870	1,077,152,614	1,714,367,787	637,215,173
Per cent change from 1923	−0.7	−5.6	+3.9	−10.8	−6.1	−9.8	−15.5

[1] The figures for years 1899 and 1909 are not strictly comparable with those for 1914 and later years, for the reason that the manufacture of cotton-lace goods was included partly in the cotton-goods and partly in the cotton small-wares branch of the industry at censuses prior to 1914.

[2] Not called for in schedule for 1921.

Source: Bureau of the Census.

Geographic Distribution of Cotton-Goods Industry.

Although there are cotton mills in 30 States, the industry is confined principally to New England and the cotton-growing States

(mainly those lying along the Atlantic seaboard). Of the 1,366 establishments reporting in 1925, 809 were located in the cotton-growing States, 332 in New England, and 225 in all other States. The number of establishments in cotton-growing States increased as compared with 1923, while the number in New England and in all other States was smaller.

Of a total production in the cotton-goods industry valued at $1,714,368,000 in 1925, the output of the mills in the cotton-growing States accounted for 54.2 per cent, the production of New England mills for 35.5 per cent, and that of mills in other States for 10.3 per cent. (Table 4.) In 1923, the first census year in which the value of the output of southern mills exceeded that of New England, 51.5 per cent of the total value of production was credited to the cotton-growing States, 37.9 per cent to New England, and 10.6 per cent to all other States.

In value of production Massachusetts in 1925 succeeded in retaining its lead, with 20.2 per cent of the total, while North Carolina stood in second place, with 18.4 per cent. The difference between the production of these two States has been considerably reduced since 1921, when Massachusetts was credited with 24.6 per cent of the total production and North Carolina with 14.9. Production in South Carolina, which ranks third in importance in the cotton-goods industry, increased in value from 11.5 per cent of the total United States output in 1921 to 12.8 in 1923 and to 13.5 per cent in 1925. The relative importance of the North and the South and the position of the leading States are shown in Table 4.

Table 4.—Geographic Distribution of Cotton-Goods Industry

Section and State	Number of establishments			Average number of wage earners (thousands)			Value of products (thousands of dollars)		
	1921	1923	1925	1921	1923	1925	1921	1923	1925
Cotton-growing States	757	768	809	193	239	247	561,816	978,283	929,107
New England States	337	357	332	187	196	165	575,104	720,472	607,925
All other States	234	250	225	32	37	33	141,301	202,371	177,336
Total	1,328	1,375	1,366	412	472	445	1,278,221	1,901,126	1,714,368
Massachusetts	182	191	178	106	114	96	313,830	415,923	345,864
North Carolina	343	351	364	66	81	84	190,990	326,572	316,069
South Carolina	154	152	162	52	62	66	146,495	243,489	230,665
Georgia	125	129	134	35	47	49	104,984	201,860	193,424
Rhode Island	73	81	75	29	34	29	102,408	126,701	107,708
Alabama	64	61	68	18	20	22	51,150	86,385	85,983
Pennsylvania	124	127	115	10	13	12	58,346	91,686	79,116
New Hampshire	17	17	17	23	19	15	51,243	66,166	57,869
Connecticut	46	48	42	14	15	12	62,987	61,067	52,100
Maine	15	16	16	13	14	12	41,928	46,702	41,188

Source: Bureau of the Census.

PRODUCTION

Production of Woven Goods.

More than 70 per cent of the total value of production in the cotton-goods industry represents woven goods over 12 inches in width, the 1925 output of which amounted to 7,741,568,000 square yards, valued at $1,245,139,000, representing a decline of approximately 6 per cent in quantity and 11 per cent in value, compared with the 1923 production. The greater percentage of loss in value reflects to a large extent the lower price of raw cotton in 1925. The average price of middling spot cotton at New York was $0.293 in 1923 and $0.235 in 1925. The production of only a few classes of cotton piece goods was larger in 1925 than in 1923, the principal increases in square yardage having been registered in the following classes: Cord fabrics for tires, 75.7 per cent; cottonades and cotton worsteds, 39 per cent; shirtings, including silk-striped and rayon-striped, 33.5 per cent; plushes, velvets, etc., 20.8 per cent; cloth composed of cotton and silk or other vegetable fiber and silk, except silk-striped shirtings (including cotton and rayon mixtures), 17.4 per cent; duck, ounce and numbered, 15.8 per cent; tobacco, cheese, butter, bunting, and bandage cloth, 12.3 per cent; and twills and sateens, 8.9 per cent.

Sheetings comprised approximately one-fifth of the total volume of woven goods over 12 inches in width produced in both 1923 and 1925. Print cloth ranked next in importance in 1925 from the standpoint of quantity, followed by twills and sateens, shirtings, cheese and tobacco cloth (including butter, bunting, and bandage cloth), ginghams, cotton flannels (canton flannel, flannelettes, and blanketings), lawns and similar muslins, drills, tire fabrics, duck, and denims. Table 5 shows the output of the principal classes of woven goods in the order of volume of production in 1925.

The 1925 production of woven goods over 12 inches in width in the cotton-growing States amounted to 4,842,005,000 square yards, valued at $653,001,000, and in New England to 2,607,368,000 square yards, with a value of $459,897,000. Compared with 1923, the foregoing figures represent an increase of 1.6 per cent in the quantity but a decline of 7.6 per cent in the value for the cotton-growing States and a decrease of 17 per cent in quantity and of 18 per cent in value for New England. The average unit price of the goods woven dropped from 14.8 cents in 1923 to 13.5 in 1925 in the South and from 17.9 to 17.6 cents in New England. In 1925 the output of southern mills accounted for 62 per cent of the total volume and for 52 per cent of the value of woven goods produced in the entire United States, while that of New England represented 34 and 37 per cent, respectively, of the total. The year 1923 was the first census year in which the value of goods produced in the South exceeded that of New England; the margin of over $143,000,000 in 1923 increased to $193,000,000 in 1925.

Table 5.—Principal Products of the Cotton-Goods Industry

[Quantity of woven goods in thousands of square yards; yarns in thousands of pounds; value in thousands of dollars]

Product	United States				New England States [1]		Cotton-growing States [1]	
	1923		1925		1923	1925	1923	1925
	Quantity	Value	Quantity	Value	Quantity			
Woven goods over 12 inches in width, total	**8,264,220**	**1,398,902**	**7,741,568**	**1,245,139**	**3,143,581**	**2,607,368**	**4,767,309**	**4,842,005**
Sheetings	1,695,520	208,338	1,638,169	180,357	329,036	270,166	1,305,829	1,318,671
Print cloth	1,578,196	144,054	1,166,374	98,453	[2] 544,161	257,097	[2] 1,012,068	906,455
Twills and sateens	489,380	91,589	532,831	84,133	288,704	274,709	160,480	227,711
Shirtings, including silk-striped and rayon-striped	341,225	72,335	455,397	75,757	123,853	156,852	214,252	295,393
Tobacco, cheese, butter, bunting, and bandage cloth	402,312	20,110	451,633	16,269	254,833	245,831	137,418	123,937
Ginghams	571,665	99,698	356,476	57,591	[2] 249,726	[2] 145,493	[2] 288,218	[2] 184,371
Canton flannel, flannelettes, and blanketings	381,397	69,635	340,416	53,607	189,208	156,002	192,187	184,414
Lawns, nainsooks, cambrics, and similar muslins	367,209	57,277	326,087	43,323	268,066	215,967	87,502	[3] 105,499
Drills	303,421	46,762	286,115	42,389	12,931	8,385	[3] 277,835	[2] 265,524
Tire fabrics, total	226,555	106,080	242,126	105,626	97,743	90,937	86,218	112,976
Tire duck	68,259	42,324	40,762	16,629	36,812	10,657	18,078	28,899
Cord	100,727	39,632	176,964	80,479	55,723	70,903	16,486	73,681
All other	57,569	24,124	24,400	8,519	5,208	9,377	51,653	10,396
Duck, ounce and numbered	167,084	57,163	193,334	53,827				
Denims	225,640	60,949	180,492	46,092	[3] 34,802	22,950	186,778	[3] 156,357
Cloth composed of cotton and silk or other vegetable fiber and silk (except silk-striped shirtings)	150,848	51,323	177,107	51,671	131,348	147,367	10,478	27,405
Towels and toweling, wash cloths, bath mats, and wiping and polishing cloths, total	122,646	[4] 36,693	126,566	38,150	6,418	8,443	87,415	96,324
Turkish	47,446	16,125	50,663	18,253	(4)	(4)	36,393	42,885
All other	75,200	20,568	75,903	19,897	(4)	(4)	51,022	53,439
Voiles	134,709	19,189	124,479	14,438				
Osnaburgs	109,101	19,539	118,069	18,449	3,789	(4)	101,730	116,675
Bagging and bags	161,917	19,218	107,724	12,665				
Blankets	88,060	24,713	92,077	29,548				
Bedspreads and quilts	35,691	13,552	52,637	16,703	23,518	24,983	11,287	26,130
Cotton table damask, in the piece or otherwise	40,905	10,852	53,468	12,450	8,076	24,576	31,876	28,604
Ticks	53,499	11,453	48,362	10,305	12,898	10,826	36,359	33,670
Sheets and pillow cases	32,099	6,067	41,416	6,728				
Plushes, velvets, velveteens, etc	27,711	35,621	33,478	40,679	7,501	7,594	1,822	(4)
Pillow tubing	17,286	3,347	30,529	5,473				
Cottonades and cotton worsteds	20,952	6,167	29,131	7,903	3,159	2,248	13,972	20,638
Corduroys	27,389	12,043	21,593	9,553				
Tapestries	20,684	20,899	15,737	17,390				
All other woven goods	471,119	74,233	499,745	95,609				
Yarns for sale [5]	620,725	348,685	626,357	313,060	113,310	109,123	451,635	490,781

[1] Details for the production of the classes not shown here by regions are not available.
[2] Excludes statistics for one establishment to avoid disclosing its operations.
[3] Excludes statistics for two establishments to avoid disclosing their operations.
[4] Statistics can not be shown without disclosing individual operations.
[5] Cotton yarns are made for sale principally by establishments classified in the cotton-goods industry. Small quantities, however, are made for sale as secondary products by establishments engaged primarily in the manufacture of textile products, other than cotton goods.

Source: Bureau of the Census.

Cotton Small-Wares and Cotton Lace-Goods Production.

Establishments engaged primarily in the manufacture of cotton small wares reported products valued at $74,675,000 in 1925, an increase of 2 per cent over 1923. The principal products of this industry are narrow woven fabrics, not over 12 inches in width, and braids of every description, made principally from purchased yarns. In 1925 the value of the principal products was as follows: Woven elastic webbing, $24,307,000; woven belting, $2,846,000; all other woven cotton small wares, $17,880,000; braided cotton small wares, $12,493,000; all other cotton small wares, $4,467,000; and miscellaneous products, $12,636,000. In addition, cotton small wares are manufactured by establishments engaged primarily in other industries. Such secondary products were equal to 15.7 per cent in 1923 and 7.6 per cent in 1925, respectively, of the total value of products reported by establishments classified under the "cotton small-wares industry" proper.

Machine-made laces and nets, especially lace curtains, are the principal products of the lace-goods branch, the output of which in 1925 was valued at $30,844,000, a decrease of 14 per cent as compared with $35,792,000 in 1923.

Rank in World Industry.

In 1927 the United States was credited with possessing 22.2 per cent of the world's [1] total cotton spindles, being exceeded only by the United Kingdom, which leads with 35 per cent.

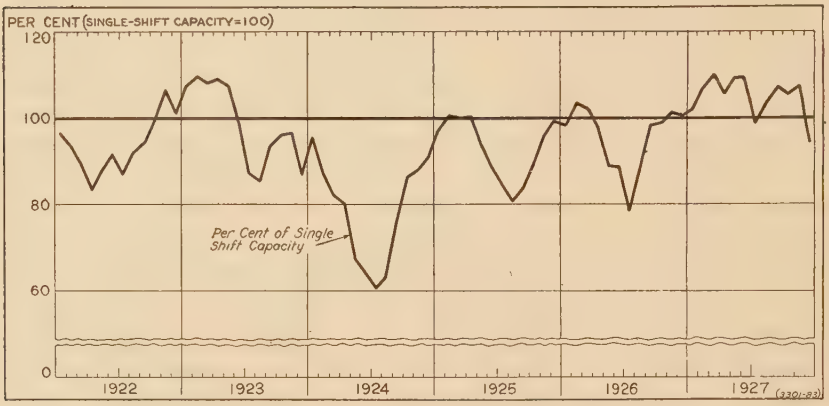
Activity of Equipment.

Census statistics for the cotton-goods industry for 1927 are not yet available, but spindle activity and cotton consumption afford a fairly accurate basis for comparing the output in 1927 with that of 1926 and 1925. During the calendar year 1927 the cotton-spinning industry operated at 104.9 per cent of its single-shift capacity (see Note, Table 6), the number of active spindle-hours aggregated 104,405,000,000, and mills consumed 7,407,000 bales of raw cotton (exclusive of linters). Compared with 1926, active spindle hours during 1927 registered a gain of 7.6 per cent and cotton consumption increased 8.2 per cent. The 1927 figures exceeded the total active spindle hours and cotton consumption of 1925 by 10 and 15 per cent, respectively, and were the greatest reported since this series of statistics was begun, in 1921.

For the cotton-growing States the aggregate number of active spindle hours in 1927 was 67,865,000,000, an increase of 10 per cent over 1926 and of 17 per cent over 1925. Cotton consumption in the South (5,405,000 bales) during 1927 represented gains of 14 per cent over 1926 and 23 per cent over 1925. In New England active spindle

[1] A table showing the number of spindles in each foreign country which manufactures large amounts of cotton textiles will be published in Vol. II of the Commerce Yearbook.

Chart I.—COTTON-SPINNING ACTIVITY: PER CENT OF SINGLE-SHIFT CAPACITY



hours totaled 32,862,000,000 in 1927, or 3.6 per cent and 0.6 per cent, respectively, more than in 1926 and 1925. New England mills, consumed 1,676,000 bales of cotton in 1927, an increase of 4.1 per cent compared with 1926, but a decrease of 1.9 per cent from 1925.

Table 6.—Cotton Spinning: Active Spindle Hours and Per Cent of Capacity

NOTE.—Per cent of capacity represents ratio between (1) the actual number of spindle hours, including overtime, double shifts, and part time, and (2) the total number of spindles in place multiplied by the number of hours per month in a single shift at normal full working time.

Month	Active spindle hours in entire United States (millions)						Percentage of activity on a single-shift basis [1]					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
Total	**92,701**	**99,508**	**80,275**	**94,600**	**97,029**	**104,405**	**93.5**	**98.9**	**78.5**	**92.9**	**95.4**	**104.9**
January	7,929	9,274	8,347	8,554	8,356	8,554	96.6	107.6	95.5	97.2	98.6	102.0
February	7,123	8,450	7,100	7,893	8,121	8,239	93.5	109.6	87.3	100.5	103.2	106.5
March	7,770	9,536	7,071	8,615	9,169	9,638	89.3	108.3	82.4	100.0	102.2	109.8
April	6,642	8,780	6,776	8,520	8,345	8,788	83.5	109.2	80.0	100.2	98.2	105.6
May	7,497	9,303	5,908	7,932	7,503	8,983	87.8	107.6	67.5	93.8	88.9	108.9
June	7,648	8,391	5,344	7,686	7,606	9,191	91.2	98.8	64.6	89.2	88.4	109.3
July	7,040	7,144	5,182	7,310	6,750	8,033	87.2	87.4	60.3	84.6	78.7	99.1
August	8,029	7,543	5,434	6,935	7,487	8,973	91.9	85.4	63.0	80.1	87.4	103.5
September	7,781	7,506	6,472	7,107	8,257	8,761	94.2	93.6	76.4	83.8	98.5	107.0
October	8,279	8,407	7,655	7,963	8,367	8,705	99.2	95.8	86.2	89.5	98.9	105.3
November	8,728	8,022	7,143	7,825	8,483	8,680	106.5	96.7	87.8	96.0	101.3	107.2
December	8,236	7,152	7,841	8,261	8,585	7,859	101.4	87.0	90.7	99.4	100.7	94.3

[1] Based on a normal single shift of about 8.78 hours per day for the period from October, 1924, to December, 1927, inclusive, and of 8.74 hours per day for months prior to October, 1924.

Source: Bureau of the Census.

During January, 1927, the cotton-spinning industry operated at 102 per cent of its single-shift capacity (based on a normal shift of about 8.78 hours per day). Operations fluctuated during the remainder of the year, the maximum activity (109.8 per cent) having been registered in March and the minimum (94.3 per cent) in December. The average for the year, 104.9 per cent, was the highest recorded since the compilation of these figures was begun in August, 1921.

Table 7.—Cotton Consumption and Active Spindle Hours, by Quarters

NOTE.—Cotton consumed includes both domestic and foreign cotton. Linters are not included. See also headnote, Table 8, page 484.

Section and quarter	Cotton consumed (thousands of bales) [1]					Active spindle hours (millions)				
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
United States, total	**6,521**	**5,522**	**6,433**	**6,684**	**7,407**	**99,508**	**80,275**	**94,600**	**97,029**	**104,405**
January–March	1,801	1,573	1,728	1,783	1,886	27,259	22,518	25,061	25,646	26,431
April–June	1,739	1,243	1,622	1,613	1,908	26,474	18,029	24,138	23,453	26,962
July–September	1,441	1,143	1,418	1,533	1,831	22,193	17,089	21,351	22,494	25,768
October–December	1,540	1,563	1,664	1,755	1,782	23,581	22,640	24,049	25,435	25,244
Southern States, total	**4,229**	**3,805**	**4,377**	**4,756**	**5,405**	**55,949**	**49,655**	**57,831**	**61,551**	**67,865**
January–March	1,132	1,074	1,169	1,248	1,360	14,697	13,563	15,235	16,001	16,870
April–June	1,107	862	1,096	1,134	1,379	14,629	11,280	14,687	14,676	17,273
July–September	965	792	962	1,105	1,342	13,059	10,769	13,167	14,633	17,008
October–December	1,025	1,076	1,149	1,269	1,324	13,564	14,043	14,742	16,241	16,714
New England, total	**1,946**	**1,434**	**1,708**	**1,610**	**1,676**	**39,009**	**27,184**	**32,655**	**31,718**	**32,862**
January–March	570	421	470	448	441	11,218	7,966	8,781	8,610	8,588
April–June	540	319	436	401	448	10,614	5,978	8,361	7,830	8,759
July–September	402	292	375	355	407	8,233	5,639	7,268	7,040	7,879
October–December	434	402	427	406	380	8,944	7,601	8,245	8,238	7,635
All other States, total	**346**	**284**	**348**	**318**	**326**	**4,550**	**3,436**	**4,114**	**3,760**	**3,678**
January–March	99	78	89	87	85	1,344	989	1,046	1,035	973
April–June	92	62	90	78	82	1,231	770	1,089	947	930
July–September	74	58	81	73	81	901	681	916	820	881
October–December	81	85	87	80	78	1,074	995	1,062	957	894

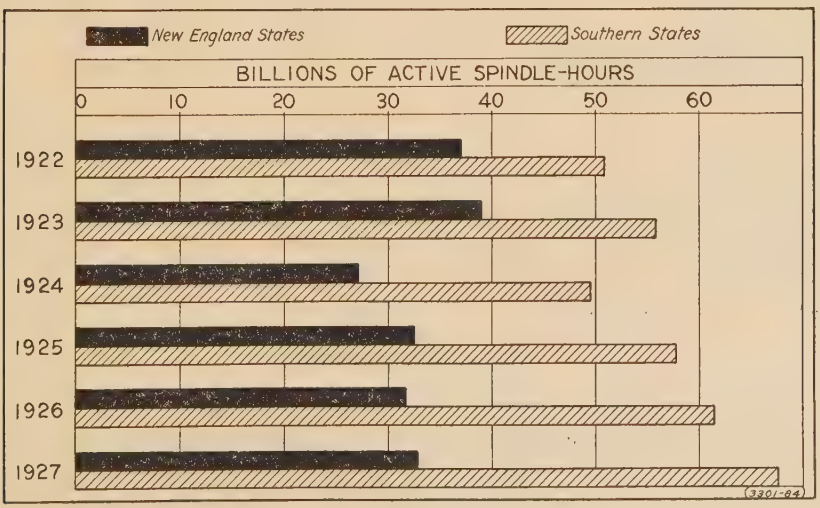
[1] Quantities are given in running bales, except that round bales are counted as half bales and foreign cotton in equivalent 500-pound bales.

Source: Bureau of the Census.

Raw Cotton Consumption by Crop Years.

Statistics of cotton consumption are usually compiled for the cotton year ending July 31, but in the foregoing tables figures were given for

Chart II.—COTTON SPINNING: ACTIVE SPINDLE HOURS IN NEW ENGLAND AND SOUTHERN STATES



calendar years in order to permit comparisons to be made with other economic data. During the cotton year ended July 31, 1927, mills in the United States consumed 7,190,000 bales of cotton (exclusive of

linters), which was 11 per cent more than in 1926 and 7.9 per cent in excess of the previous high record (6,666,000 bales) established in 1923. Table 8 shows the consumption of cotton (excluding linters subsequent to 1905) for the United States as a whole, for New England, and the South during representative years between 1870 and 1920 and for all years since 1920.

Table 8.—Cotton Spindles and Raw Cotton Consumption, by Crop Years

NOTE.—The number of active spindles represents spindles operated at any time during the year, and without considering short or overtime or idle periods. The ratio of number active to number in place furnishes therefore little indication of the activity of the industry. The difference between the geographic distribution of spindles and that of cotton consumed is due to the fact that New England mills, on the average, make finer (smaller) yarns than the southern mills.

Cotton year [1]	Spindles in place July 31 (thousands)	Active cotton spindles (thousands)				Cotton consumed (thousands of bales) [2]				
		United States	New England	The South	Other States	United States			New England	The South
						Domestic	Foreign	Total [3]		
1870	(4)	7,132	5,498	328	1,306	(4)	(4)	797	551	69
1880	(4)	[5] 10,653	[5] 8,632	[5] 561	[5] 1,460	(4)	(4)	[5] 1,570	[5] 1,129	[5] 189
1890	(4)	14,384	10,934	1,570	1,880	(4)	(4)	2,518	1,502	539
1900	(4)	19,472	13,171	4,368	1,933	(4)	(4)	3,873	1,909	1,523
1905	24,078	23,687	14,203	7,631	1,853	(4)	(4)	[6] 4,279	[6] 1,753	[6] 2,140
1910	28,929	28,267	15,735	10,494	2,038	4,466	156	4,622	1,995	2,234
1913	32,150	31,520	17,311	12,227	1,981	5,250	233	5,483	2,178	2,862
1920	35,834	35,481	18,287	15,231	1,963	6,003	417	6,420	2,397	3,583
1921	36,618	36,047	18,388	15,709	1,951	4,677	216	4,893	1,614	2,997
1922	36,946	35,708	17,939	15,906	1,863	5,613	297	5,910	1,823	3,730
1923	37,409	36,260	18,054	16,310	1,896	6,322	344	6,666	2,050	4,248
1924	37,804	35,849	17,066	16,944	1,839	5,353	328	5,681	1,535	3,858
1925	37,929	35,032	15,975	17,292	1,765	5,917	276	6,193	1,639	4,220
1926	37,586	34,750	15,526	17,574	1,650	6,176	280	6,456	1,628	4,500
1927	36,696	34,410	14,995	17,894	1,521	6,880	309	7,190	1,675	5,194
1928 (first half) [7]	36,349	32,127	12,875	17,798	1,455	3,465	160	3,625	778	2,690

[1] Prior to 1915, years ended Aug. 31, thereafter ended July 31.
[2] Includes linters previous to 1910.
[3] Total includes New England, the South, and all other States. The figures for the latter amounted to 368,764 bales in 1923, 287,460 in 1924, 334,633 in 1925, 327,612 in 1926, 321,313 in 1927, and 157,368 in the first half of 1928.
[4] Not available.
[5] Cotton mills only.
[6] Does not include foreign cotton.
[7] Spindles in place as of Jan. 31, 1928.
Source: Bureau of the Census.

Total world [2] mill consumption of cotton for the 12 months ended July 31, 1927, is placed at 25,869,000 bales, an increase of 8 per cent over the preceding year and of 17.8 per cent, compared with 1912–13. The proportion of the world mill consumption of cotton used in the United States was 27.8 per cent in 1926–27, compared with 27 per cent in 1925–26 and 25 per cent in 1912–13.

PRICE MOVEMENT

Prices of raw cotton fluctuated considerably during 1927, but the general trend was upward during the first three-quarters of the year, the average for each month up to September being slightly higher than that of the preceding month. The year opened with spot middling cotton at New York quoted at 12.95 cents per pound.

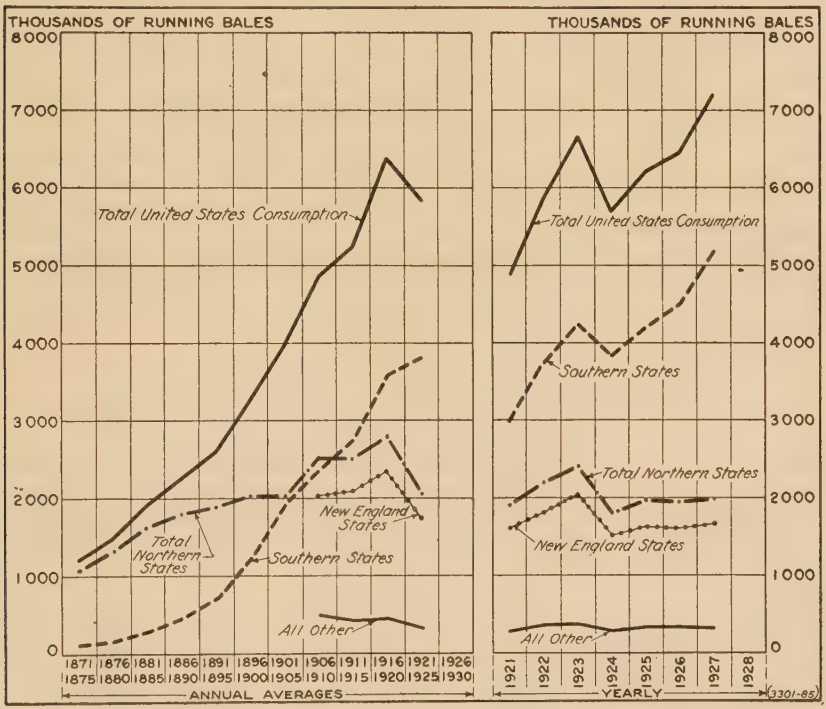
[2] A table showing mill consumption of cotton in foreign countries will be published in Vol. II of the Commerce Yearbook.

Prices touched the low point of the year (12.80 cents) on January 3 and reached the peak (23.90 cents) on September 8, from which date they showed a downward tendency, with minor recessions and recoveries. At the end of the year the price stood at 20.10 cents.

Market prices of cotton yarns generally moved in sympathy with raw cotton prices during 1927. They displayed an upward tendency during the first three-quarters of the year and reached their peak

Chart III.—MILL CONSUMPTION OF COTTON IN NORTHERN AND SOUTHERN STATES

NOTE.—Cotton consumed includes linters and foreign cotton prior to 1911; thereafter linters are excluded. Figures represent cotton years ended Aug. 31 prior to 1915, thereafter years ended July 31.



during September, from which point there was a fairly steady decline. The average for the last three months of the year, however, was slightly higher than that of the preceding quarter.

Prices for cotton cloth were fairly stable during the first four months of 1927, after which prices advanced until about the middle of September. Subsequently a gradual decline began which continued almost to the close of the year, when prices again strengthened slightly. Quotations on a 27-inch, 64 by 60, 7.60-yard print cloth rose from 4.6 cents a yard for the first week of 1927 to 6.562 cents for the week ended September 9, dropped to 5.625 cents in the middle of December, and closed the year at 5.75 cents. Prices of 36-inch, 48-square, 3-yard gray sheeting stood at 9 cents during the first two

months of the year; the advance which began in March carried quotations on this sheeting to the peak of the year (13.041 cents) in the middle of September, after which the price declined to 11.218 cents for the last week of the year. The price movement of other standard cloths followed closely the trend indicated by the foregoing outline of prices on 27-inch print cloth and 3-yard gray sheeting, except that the recession of prices in the last quarter was limited to gray goods, while bleached and colored goods generally maintained the levels attained in the third quarter and in some cases even registered a higher average price for the last three months of the year.

Table 9.—Spot Prices of Middling Upland Cotton at New York by Calendar Years and Months

[In cents per pound. For annual averages by crop years see Table 36, p. 214]

Year	Price	Year	Price	Month	1921	1922	1923	1924	1925	1926	1927
1891–1895	7.8	1917	23.5	January	16.7	17.9	27.5	34.7	24.0	20.8	13.4
1896–1900	7.5	1918	31.8	February	13.9	18.1	29.0	31.9	24.7	20.6	14.0
1901–1905	10.1	1919	32.5	March	11.8	18.3	30.7	28.5	25.6	19.4	14.4
1906–1910	12.1	1920	33.9	April	12.1	18.1	29.0	29.9	24.4	19.2	14.6
1911–1915	11.9	1921	15.1	May	12.9	20.8	27.7	31.6	23.4	18.9	16.3
				June	12.0	22.1	28.4	30.0	24.2	18.6	16.8
1916–1920	27.2	1922	21.2	July	12.4	22.3	25.9	31.7	24.8	18.7	18.0
1921–1925	23.6	1923	29.3	August	13.9	21.9	25.5	29.3	23.8	18.7	20.3
1913	12.8	1924	28.7	September	20.4	21.5	28.6	24.4	23.6	17.0	21.8
1914	12.1	1925	23.5	October	19.7	22.8	30.1	24.5	22.0	13.2	21.1
1915	10.2	1926	17.5	November	18.2	25.6	35.0	24.3	20.8	12.8	20.3
1916	14.5	1927	17.6	December	18.3	25.7	35.8	23.9	20.2	12.8	19.6

Source: Bureau of Labor Statistics, Department of Labor.

Table 10.—Wholesale Prices of Yarn and Cloth

[Yarn in cents per pound and cloth in cents per yard]

Yearly average, year, or quarterly average	Yarn, carded, white, mulespun, northern 22/1, cones	Sheeting, brown, Pepperell, 36-inch, 3.75-yard	Print cloth, 27-inch, 7.6-yard [1]	Bleached muslin, Fruit of the Loom, 36-inch	Drill, brown, Pepperell, 29-inch, 2.85-yard	Gingham, Amoskeag, 27-inch, 6.37-yard
1891–1895	20.6	5.6	3.1	7.7	5.8	5.8
1896–1900	18.9	5.3	2.6	6.6	5.5	4.7
1901–1905	20.5	6.1	3.1	7.7	6.5	5.3
1906–1910	23.5	7.1	3.8	9.4	7.8	6.1
1911–1915	22.5	6.8	3.3	8.5	7.8	6.5
1916–1920	54.1	16.6	8.9	21.7	20.0	16.0
1921–1925	42.1	13.7	6.5	17.7	15.7	12.5
1913	24.8	7.3	[1] 3.5	8.5	8.2	6.5
1920	70.3	21.8	12.6	34.4	29.1	22.1
1921	33.1	11.4	5.1	16.6	12.6	11.9
1922	39.7	12.5	6.6	17.1	13.7	12.8
1923	48.6	15.2	7.5	18.5	17.8	14.3
1924	47.4	15.5	6.8	18.3	18.1	12.2
1925	41.8	13.9	6.6	18.0	16.4	11.3
1926	35.8	12.3	5.2	16.7	12.7	9.0
1927	35.1	12.1	5.5	16.1	12.0	9.5
1926						
January–March	39.5	13.3	5.9	17.3	14.8	9.0
April–June	36.0	12.8	5.1	16.7	12.7	9.0
July–September	35.8	12.0	5.1	16.6	12.3	9.0
October–December	32.0	11.1	4.8	16.1	11.2	9.0
1927						
January–March	30.6	10.8	4.8	15.5	10.6	9.0
April–June	33.1	10.9	5.2	15.9	10.7	9.0
July–September	38.2	12.9	6.0	16.4	12.8	9.5
October–December	38.5	13.7	6.0	16.6	13.9	10.5

[1] Previous to 1913 quotations are for a 28-inch print cloth, the 1913 price of which was 3.8 cents.

Source: Bureau of Labor Statistics, Department of Labor.

Table 11.—Prices of Standard Cotton Cloths, in Cents Per Yard

Cotton cloth	1911–1913	1921	1923	1924	1925	1926	1927	Jan.–Mar., 1927	Apr.–June, 1927	July–Sept., 1927	Oct.–Dec., 1927
Print cloth, 27-inch, 64 by 60, 7.60-yard	3.31	5.08	7.46	6.78	6.54	5.20	5.49	4.77	5.17	6.04	5.98
Print cloth, 38½-inch, 64 by 60, 5.35-yard	4.85	7.71	10.20	9.06	9.22	7.49	7.59	6.85	7.04	8.23	8.22
Print cloth, 39-inch, 80 by 80, 4.00-yard	6.94	11.39	13.61	13.28	12.70	10.59	10.46	9.78	10.06	11.01	10.99
Gray sheeting, 36-inch, 56 by 60, 4.00-yard	5.99	8.58	12.14	11.36	10.43	9.06	9.03	7.88	8.12	9.93	10.17
Gray sheeting, 40-inch, 48 by 48, 2.85-yard	7.78	9.86	15.62	14.47	13.20	11.16	10.95	9.79	10.05	11.87	12.11
Gray sheeting, 36-inch, 48 by 48, 3.00-yard	7.20	8.54	14.42	13.85	12.72	10.88	10.49	9.08	9.50	11.56	11.82
Bleached wide sheeting, class A, 10/4	25.86	50.73	57.48	56.40	53.28	48.33	45.84	44.46	44.46	46.56	47.88
Drill, 30-inch, 2.85-yard	7.93	10.04	15.97	14.87	13.85	11.61	11.32	9.95	10.19	12.24	12.89
Sateen, 39-inch, 64 by 104, 4.20-yard	7.04	12.30	16.71	13.78	12.82	11.96	11.70	11.26	11.41	11.92	12.20
Denim, standard, 2.20-yard	11.46	15.67	23.83	21.46	18.91	15.42	16.11	14.08	14.71	16.94	18.73
Gingham, 27-inch eastern standard staple	6.19	12.33	14.39	12.21	11.15	8.94	9.49	9.00	9.00	9.56	10.38

Source: Fairchild Cotton Goods Index, Daily News-Record.

Fluctuations in Demand for Cotton Cloth.

The steady upward trend of cloth prices until early September, coupled with a good volume of production and sales, enabled some of the cotton mills to realize a profit in 1927 for the first time in recent years. The year started with a brisk volume of trade and sales of cloth were in excess of production. Figures compiled by the Association of Cotton Textile Merchants of New York from reports of commission houses and mills which represent more than half of the industry (the mills being located chiefly in the South) show that sales of a wide range of cotton goods continued to outstrip production until the end of May but lagged behind production during June and July. Sales recovered the lead during August, fell below production in the succeeding three months, and in December again exceeded the output. Buying of gray goods during the first quarter of 1927 was the largest in the history of the industry, low prices encouraged distributors to drop hand-to-mouth purchasing policies temporarily, and the market impetus of the earlier months of the year kept the mills operating full time during the greater part of 1927. Slackening demand for gray goods led to some curtailment of mill operations during December. A slight revival of buying activity was evident near the close of the year.

The consumption of rayon by cotton mills during 1927 is estimated to have reached approximately 23,000,000 pounds, an increase of more than 50 per cent compared with 1926, according to a trade authority. Of this amount about 60 per cent was consumed in New England, mostly by fine-goods mills. Rayon was used extensively in combination with cotton for dress goods as well as in draperies,

bedspreads, and shirtings during 1927. This expansion in the consumption of rayon is an indication of the present tendency of manufacturers of piece goods to give more attention to the development of new and attractive cotton dress fabrics in order to promote sales.

Functions of Cotton Textile Institute.

An outstanding feature of 1927 was the increased activity of the Cotton Textile Institute, which was organized in 1926 and which at the close of 1927 represented more than 21,700,000 spindles. The Cotton Textile Institute is described by its secretary as the tangible expression of the desire on the part of manufacturers themselves to operate more closely in line with economic laws, and its function as that of an educational and informative medium. It aims to make careful studies of available statistics on supply and demand in order that mill production may be adjusted intelligently to market requirements and thus prevent overproduction and consequent periods of depression. The institute is also attempting to evolve better systems of cost accounting for cotton mills, and it has undertaken, in cooperation with the United States Departments of Agriculture and Commerce, to study the present uses of cotton and to develop new uses, both in the domestic and export markets. A study of present uses of cotton has been completed and published by the Department of Commerce under the title of "Cotton Fabrics and Their Uses," while the study of new uses is still in progress.

WAGES AND HOURS OF LABOR IN THE COTTON-GOODS INDUSTRY

A study of wages and hours of labor of employees in the cotton-goods manufacturing industry in the United States has been made by the Bureau of Labor Statistics, Department of Labor. The information was compiled from records of 151 cotton mills engaged in the manufacture of broad or wide-woven cotton goods of varying weight and quality. These mills were located in the 12 leading cotton-manufacturing States, in which, according to the Bureau of the Census, nearly 93 per cent of the wage earners in the entire industry are employed. The 1926 averages cover 46,879 males and 36,103 females and the comparable data for 1924 are for 45,056 males and 32,939 females.

This survey showed that from 1924 to 1926 average full-time hours per week of males in all occupations increased from 53.5 to 53.8, those of females from 52.3 to 52.8, and those of males and females combined from 53 to 53.3. In the same period average earnings per hour of males decreased from 39 to 34.7 cents, earnings of females declined from 34.7 to 30.1 cents, and those of males and females combined from 37.2 to 32.8 cents. Average full-time weekly earnings of males declined from $20.87 in 1924 to $18.67 in 1926, earnings of females

from $18.15 to $15.89, and earnings in the industry as a whole from $19.72 to $17.48.

In 1924 the highest average earnings per hour of males in any occupation were those of mule spinners, 74.6 cents, and the lowest were those of spooler tenders, 19.2 cents. For females the hourly earnings ranged from 44.8 cents, earned by slubber tenders and beamer tenders, to 26.8 cents, earned by trimmers or inspectors. In 1926 hourly earnings of males ranged from 65.6 cents for mule spinners to 19 cents for spooler tenders; and earnings of female workers from 41.1 cents for beamer tenders to 24.6 cents for spooler tenders and trimmers or inspectors.

FOREIGN TRADE

Exports and Imports of Raw Cotton.

Exports of raw cotton, including linters, increased from a total of 9,048,000 bales, valued at $814,429,000, in 1926 to 9,478,000 bales with a value of $826,318,000, in 1927, a gain of 4.7 per cent in quantity but of only 1.5 per cent in value. The latter figure reflects the decline in the average export price of cotton per pound from 17.36 cents in 1926 to 16.87 cents in 1927. Exports of raw cotton reached a postwar peak in 1927 and were the highest on record since 1912, when shipments totaled 10,694,000 bales.

Europe took 76.7 per cent of the total quantity of cotton shipped abroad in 1927 as against 80.6 per cent in 1926; its purchases of cotton from the United States declined from a total of 7,293,000 bales in 1926 to 7,265,000 in 1927. In 1927, for the first time in the history of cotton exports, Germany superseded Great Britain as the leading foreign market for American cotton. About one-third of the American cotton reaching Germany is reexported to eastern and central Europe. Compared with 1926, shipments to Germany registered an increase of 529,000 bales, while exports to the United Kingdom recorded a decrease of 613,000 bales. With the exception of France and Italy, sales of American cotton to other important consuming markets on the Continent, including Soviet Russia in Europe, were larger in 1927 than in 1926. The following marked gains also occurred in exports of American cotton to far eastern countries during 1927 as compared with 1926: India, 200,000 bales; Japan, 187,000 bales; and China, Hong Kong, and Kwantung, 70,000 bales.

Imports of raw cotton, chiefly special types not produced in this country, amounted to 205,609,000 pounds, valued at $45,669,000 in 1927, an increase of 13.3 per cent in quantity, but a decrease of 1.2 per cent in value, as compared with 1926. The average price per pound of the cotton imported into the United States declined from 25.5 cents per pound in 1926 to 22.2 cents in 1927. Of the imports

Egypt supplied 60.8 per cent in 1926 and 59.7 per cent in 1927, but the percentage coming from that country is higher than is indicated by the direct imports because the bulk of the cotton imported from the United Kingdom (5,990,000 pounds in 1926 and 13,388,000 in 1927) is of Egyptian origin. China, Mexico, British India, and Peru, in the order named, were other important sources of the 1927 imports of cotton.

Foreign Trade in Cotton Manufactures Summarized.

Exports of cotton manufactures were valued at $133,293,000 in 1927, an increase of 3.4 per cent, compared with 1926. Cotton cloth is the most important item in the export trade in cotton manufactures and accounted for approximately 58 per cent of the total in both 1926 and 1927. Compared with 1926 shipments, exports of yarn, thread, and cordage increased 13 per cent in quantity, while exports of hosiery declined 8.6 per cent in quantity.

Imports of cotton manufactures were valued at $66,198,000 in 1927, a decrease of 1.4 per cent from the 1926 total. Cotton cloth represented approximately 24 per cent of the total value of imports of cotton manufactures, laces and embroideries accounted for 19 per cent, and knit goods for 13 per cent. The principal items showing increases in 1927 as compared with 1926 were: Knit goods, tapestries and other Jacquard-woven upholstery goods, pile fabrics, and laces and embroideries. The value of practically all other classifications except "All other cotton manufactures" declined in 1927 as compared with 1926.

Values of imports and exports of cotton manufactures since 1871 are shown in Table 12.

Table 12.—Value of Imports and Domestic Exports of Cotton Semimanufactures and Manufactures

NOTE.—The changes in prices have greatly affected the value.

[In thousands of dollars]

Yearly average [1]	Imports	Exports [2]	Year [1]	Imports	Exports [2]	Year [1]	Imports	Exports [2]
1871–1880	26,691	[3] 6,621	1912	65,175	50,770	1921	75,430	115,539
1881–1890	30,299	[3] 12,558	1913	66,087	51,510	1922	87,070	136,778
1891–1900	31,588	16,924	1914	70,723	49,246	1923	100,153	136,300
1901–1905	47,839	31,333	1915	46,258	70,247	1924	90,914	130,808
1906–1910	67,851	35,141	1916	54,609	127,052	1925	79,271	146,272
1911–1915	63,049	53,761	1917	55,675	157,267	1926	67,159	128,877
1916–1920	68,244	226,423	1918	40,701	179,106	1927	66,198	133,293
1921–1925	86,568	133,139	1919	52,652	270,235			
1911	67,004	40,852	1920	137,583	398,458			

[1] Fiscal years to 1915, inclusive; calendar years thereafter.
[2] Export figures for periods 1916-1920 and 1921–1925 and single years 1913 to 1926, inclusive, differ from those previously published. Owing to a change in classification, they have been revised for comparability. See Table 13, p. 491.
[3] Figures for the years 1871 to 1883, inclusive, excluded "Cotton wearing apparel," which was not reported separately.

Table 13.—Imports and Exports of Principal Classes of Cotton Semimanufactures and Manufactures

NOTE.—Items omitted as to both quantity and value for 1910–1914 are not separately shown for those years, but are included in related classifications or in "All other cotton manufactures."

Class	Quantity in thousands [1]				Value in thousands of dollars [1]			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Imports, total					**67,412**	**79,271**	**67,159**	**66,198**
Cotton waste.....pounds	39,598	36,393	29,736	24,730	1,918	3,727	2,147	1,623
Yarn and warps.....do	7,395	3,619	3,661	3,305	4,178	5,316	4,315	3,775
Sewing thread, crochet, darning, and knitting cotton.....100 yards		29,902	21,890	21,377		3,469	2,388	1,962
Cloth, total.....square yards	53,893	109,249	60,680	63,002	9,041	26,424	16,258	15,596
Not bleached.....do	4,235	75,397	33,115	27,451	493	15,423	6,839	5,156
Bleached.....do	49,658	4,832	5,236	10,146	8,548	1,584	1,533	2,154
Colored, printed, dyed, etc., square yards		29,020	22,329	25,405		9,417	7,887	8,286
Pile fabrics					1,935	1,178	2,386	2,796
Tapestries and other Jacquard-woven upholstery goods						3,265	4,345	5,468
Hosiery.....dozen pairs		563	497	528	3,613	1,942	1,612	1,793
Knit gloves.....do		1,659	2,111	2,190		5,488	6,514	6,544
Other knit goods					917	294	291	431
Other wearing apparel					3,737	5,744	6,877	5,134
Laces and embroideries					35,910	14,603	12,086	12,476
All other					6,163	7,821	7,940	8,602
Exports, total					**46,046**	**[3] 146,272**	**[3] 128,877**	**133,293**
Cotton mill waste.....pounds	62,273	77,048	66,788	96,522	3,833	8,721	6,078	8,651
Yarn, thread, and cordage.....do		27,536	30,453	34,464	621	15,115	15,464	17,274
Cloth, total.....square yards [2]	398,574	543,317	513,300	564,884	27,052	85,012	74,589	76,738
Duck and tire fabrics.....do		11,557	13,305	20,139		5,065	5,033	6,540
Unbleached.....do	195,667	129,581	119,608	125,582	13,488	15,096	12,455	11,339
Bleached.....do	33,848	92,938	98,359	87,301	2,590	13,352	12,371	9,984
Printed.....do	169,059	111,198	99,150	117,334	10,975	14,921	14,046	15,770
Piece-dyed.....do		107,345	100,437	120,244		20,320	17,645	19,281
Yarn-dyed or stock-dyed.....do		90,698	82,442	94,283		16,257	13,040	13,825
Hosiery.....dozen pairs		5,534	4,745	4,337		10,494	8,407	7,330
Other knit goods					1,968	4,505	3,979	3,165
Other wearing apparel					6,775	[3] 7,172	[3] 6,122	5,276
All other					5,797	15,253	14,238	14,860

[1] Fiscal year average for 1910–1914 and calendar years thereafter.
[2] Quantities for 1910–1914 in linear yards, not square yards.
[3] These figures differ from those previously published due to a change in classification (excluding corsets) beginning Jan. 1, 1927.

Source: Bureau of Foreign and Domestic Commerce.

Exports of Cotton Cloth.

Exports of cotton cloth aggregated 564,884,000 square yards, valued at $76,738,000, in 1927, an increase of 10 per cent in quantity and of almost 3 per cent in value. The average unit price of the goods exported declined from 14.5 cents per square yard in 1926 to 13.6 in 1927. The quantity of cotton-cloth exports in 1927 exceeded that of the fiscal year 1913 by 27 per cent. (Table 14.)

Of the total exports of cotton cloth in 1927 cotton duck and tire fabrics accounted for 20,139,000 square yards, worth $6,540,000. The balance included 125,582,000 square yards of unbleached cloth,

87,301,000 of bleached, 117,334,000 of printed, 120,244,000 of piece-dyed, and 94,283,000 of yarn or stock-dyed. Comparative figures for preceding years are given in Table 13.

Chart IV.—COTTON CLOTH: DOMESTIC EXPORTS AND IMPORTS, BY QUARTERS

NOTE.—Previous to January 1, 1922, quantity of exports given in yards, not square yards.

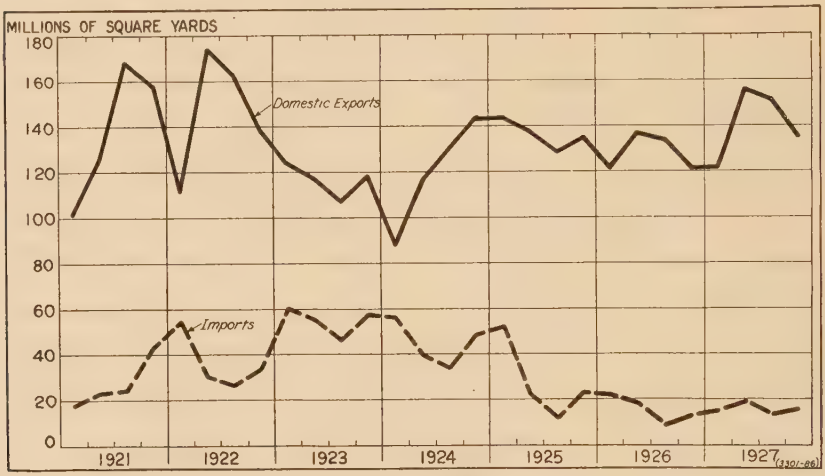


Table 14.—Cotton Cloth: Domestic Exports and Imports

[Quantity and value in thousands of square yards or dollars]

Year	Domestic exports		Imports		Quarter	Domestic exports		Imports	
	Quantity [1]	Value	Quantity	Value		Quantity	Value	Quantity	Value
1913 [2]	444,729	30,668	43,637	7,758	1926				
1919	683,045	151,998	49,753	17,665	Jan.-Mar.	120,348	18,687	20,919	5,293
1920	818,751	238,154	141,331	51,865	Apr.-June	137,237	20,535	17,912	4,729
1921	551,513	71,574	106,308	29,426	July-Sept.	133,990	18,706	8,821	2,656
1922	587,493	85,232	[3]142,458	39,073	Oct.-Dec.	121,726	16,660	13,028	3,580
1923	464,520	79,357	218,970	47,188					
1924	477,815	78,204	177,386	37,703	1927				
1925	543,317	85,012	[3]09,249	26,424	Jan.-Mar.	121,775	15,968	15,481	3,927
1926	513,300	74,589	60,680	16,258	Apr.-June	156,012	20,195	18,918	4,348
1927	564,884	76,738	63,002	15,596	July-Sept.	151,632	20,633	13,533	3,528
Per cent change, 1927 from 1926	+10.0	+2.9	+3.8	−4.1	Oct.-Dec.	135,465	19,943	15,069	3,793

[1] Quantity for exports given in linear yards, not square yards, prior to Jan. 1, 1922.
[2] Fiscal year ended June 30.
[3] Quantity estimated for the period Sept. 22 to Dec. 31, inclusive.

Source: Bureau of the Census.

Principal Markets for American Cotton Cloth.

The principal export markets for American cotton piece goods are the Latin-American countries, the Philippine Islands, and Canada. The Philippine Islands took 88,016,000 square yards of cotton cloth in 1927, which was 13 per cent less than in 1926 and was also slightly smaller than in the fiscal year 1913. Cuba, the second largest

foreign market for United States cotton cloth, increased its purchases from 70,004,000 square yards in 1926 to 79,995,000 square yards in 1927, the latter figure being more than three and one-half times the exports to Cuba in 1913. Exports to South America aggregated 119,817,000 square yards in 1927, which was 2 per cent more than in the preceding year and more than twice as much as in 1913. Shipments to Central America, which totaled 60,398,000 square yards in 1927, were 14 per cent greater than in 1926 and were much larger than before the war. Canadian purchases, amounting to 62,984,000 square yards in 1927, showed a marked increase over those of 1926 and were more than double the 1913 figure. China, British India, and Aden took relatively small quantities in 1927 compared with pre-war shipments. The expansion of native cotton-manufacturing industries in British India and China and the competition from Japanese goods have seriously reduced United States cotton-cloth sales in the Far East.

Table 15.—Exports of Cotton Cloth, by Countries of Destination

Country of destination	Quantity (thousands)					Value (thousands of dollars)				
	1913 [1]	1924	1925	1926	1927	1913 [1]	1924	1925	1926	1927
	Yards	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*					
Total	444, 729,	477, 815	543, 317	513, 300	564, 884	30, 669	78, 204	85, 012	74, 589	76, 738
United Kingdom	2, 469	2, 150	4, 266	3, 578	7, 699	424	949	1, 289	1, 062	2, 077
Canada	27, 122	33, 389	38, 061	46, 165	62, 984	2, 507	6, 106	6, 872	7, 422	8, 512
Central America	34, 048	62, 694	63, 192	53, 038	60, 398	2, 181	8, 898	8, 655	6, 822	7, 233
Mexico	2, 648	18, 001	21, 142	14, 395	11, 043	350	3, 899	4, 496	2, 807	1, 988
Jamaica	6, 384	7, 722	13, 109	10, 114	13, 480	450	960	1, 562	1, 057	1, 367
Cuba	22, 074	80, 923	66, 424	70, 004	79, 995	1, 532	13, 600	10, 041	9, 780	10, 146
Dominican Republic	13, 159	17, 371	17, 825	13, 812	23, 034	877	2, 773	2, 805	1, 950	2, 991
Haiti, Republic of	20, 172	23, 181	31, 056	17, 481	27, 337	1, 387	3, 802	4, 709	2, 240	3, 318
Other West Indies [2]	5, 598	5, 147	7, 322	8, 034	7, 669	393	862	1, 147	1, 104	1, 020
Argentina	1, 529	21, 223	22, 859	19, 294	24, 754	180	3, 882	3, 938	3, 478	4, 344
Bolivia	4, 680	5, 840	7, 203	7, 527	7, 235	286	857	942	883	772
Brazil	1, 136	10, 350	7, 436	4, 429	6, 991	120	1, 650	1, 227	855	1, 313
Chile	10, 497	22, 685	23, 517	24, 656	24, 429	689	3, 525	3, 491	3, 227	2, 651
Colombia	26, 388	32, 318	43, 919	33, 708	29, 489	1, 337	4, 675	6, 072	4, 492	3, 698
Ecuador	2, 926	9, 046	10, 800	3, 903	5, 346	178	1, 191	1, 407	525	628
Peru	1, 767	6, 769	4, 734	7, 043	4, 766	125	1, 335	843	1, 131	751
Venezuela	3, 869	10, 618	10, 535	8, 425	6, 328	344	1, 859	1, 823	1, 404	1, 046
Other South America	1, 372	7, 280	8, 479	8, 618	10, 479	108	1, 197	1, 272	1, 178	1, 312
Aden	24, 690	2, 485	4, 338	4, 399	3, 828	1, 434	254	416	380	267
British India	13, 748	3, 031	4, 637	5, 456	5, 547	1, 164	534	705	712	685
China	80, 462	1, 551	7, 419	1, 418	1, 024	5, 585	290	1, 083	257	185
Philippine Islands	93, 260	67, 514	79, 752	101, 072	88, 016	5, 777	9, 640	11, 513	13, 362	11, 346
Australia	8, 314	3, 216	5, 002	8, 030	8, 649	736	779	1, 311	1, 889	2, 067
British South Africa	252	7, 794	12, 172	14, 021	15, 113	40	1, 778	2, 525	2, 485	2, 603
Other countries	36, 166	15, 515	28, 118	24, 680	29, 251	2, 462	2, 908	4, 869	4, 089	4, 417

[1] Fiscal year ended June 30, 1913.
[2] Including Bermuda.
Source: Bureau of Foreign and Domestic Commerce.

Principal Classes of Cotton Cloth Imported.

United States imports of cotton cloth increased in quantity from 60,680,000 square yards in 1926 to 63,002,000 square yards in 1927, but declined in value from $16,258,000 to $15,596,000. The average unit price of cloth imported was 24.8 cents in 1927, compared with

26.8 cents in 1926. In recent years unbleached goods have constituted the most important class in imports of cotton cloth, but the proportion represented by unbleached goods declined from 55 per cent of the square yardage in 1926 to 44 per cent in 1927. This compares with an average of less than 8 per cent for the five-year period 1910 to 1914. Imports of bleached goods in 1927 were almost double those of 1926 and receipts of colored, dyed, printed, and woven figured goods also increased.

The United Kingdom supplied about 65 per cent of the total square yardage of cotton cloth imported in 1927 against 73 per cent in 1926, while its share in the total value declined from 75 per cent in 1926 to 68 per cent in 1927. Switzerland more than doubled its shipments to the United States in 1927, imports from that country having amounted to 11,450,000 square yards, or 18 per cent of the total, in 1927. Czechoslovakia, France, Japan, and Germany were other sources of cotton cloth imported in 1927.

Imports of Cotton Cloth, by Commercial Classifications.

Monthly imports of specified kinds of cotton cloth, designated by commercial classifications, through the customs districts of New York, Boston, Philadelphia, Chicago, and San Francisco, have been tabulated since March, 1924. The entries through these customs districts constituted approximately 87 per cent of the total imports in 1925 and about 85 per cent in both 1926 and 1927.

Poplins, broadcloths, madras, oxfords, and other shirtings comprised 67 per cent of the square yardage volume of cotton cloth imported through the aforementioned five leading customs districts during 1925, 48 per cent in 1926, and 30 per cent in 1927. The bulk of these shirtings are imported in the unbleached state. Imports of unbleached poplins, broadcloths, and other shirtings declined from 54,575,000 square yards in 1925 to 16,237,000 in 1926 and to 7,639,000 in 1927. The continued decrease in importations of these shirtings is attributed partly to the declining popularity of broadcloths and partly to the increasing ability of domestic mills to supply the types of broadcloth in demand. The introduction of cheaper qualities of broadcloths made in imitation of the original "ply broadcloths" undoubtedly has been a factor in the reduced demand for the imported fabric. The average unit price of imported unbleached broadcloths and other shirtings, however, has advanced steadily from 20.35 cents per square yard in 1925 to 22.34 cents in 1926 and to 23.86 cents in 1927, an indication that present importations are of the better grades of shirtings.

In 1927, for the first time since the compilation of these detailed statistics was begun, imports of the group classed as "lawns, organdies, nainsooks, cambrics, and similar fine goods of average yarn

number above 40" exceeded those of the group "poplins, broadcloths, madras, oxfords, and other shirtings," the total for the former being 23,319,000 square yards and for the latter 15,871,000.

Table 16.—Imports of Specified Kinds of Cotton Cloth Through the Customs Districts of New York, Boston, Philadelphia, Chicago, and San Francisco

[Quantity and value in thousands of square yards or dollars]

Description of cloth	January to December, 1925		January to December, 1926		January to December, 1927	
	Quantity	Value	Quantity	Value	Quantity	Value
Poplins and broadcloths, madras, oxfords, and other shirtings:						
Unbleached	54,575	11,108	16,237	3,627	7,639	1,823
Bleached	2,302	818	1,592	586	1,487	494
Printed, colored, or fancy woven	6,519	2,251	6,588	2,380	6,745	2,381
Sateens woven with not more than 7 harnesses:						
Unbleached	4,031	796	3,094	515	4,717	683
Bleached	164	40	209	46	80	20
Printed, colored, or fancy woven	1,799	498	1,090	295	796	238
Sateens woven with 8 or more harnesses:						
Unbleached	549	149	871	197	785	202
Bleached	71	27	132	46	90	33
Printed, colored, or fancy woven	2,174	846	1,329	458	1,909	578
Lawns, organdies, nainsooks, cambrics, and similar fine goods of average yarn number above 40:						
Unbleached	6,918	1,655	7,807	1,733	10,309	1,956
Bleached	1,947	638	2,598	731	7,818	1,553
Printed, colored, or fancy woven	2,881	975	2,970	940	5,192	1,355
Voiles, plain or fancy	5,552	1,155	3,314	591	2,496	429
Crêpes, plain or fancy	3,333	537	1,413	198	962	108
Ratines	197	75	241	55	25	8
All Jacquard-woven cloths, other than swivels or lappets	736	406	1,196	563	1,576	713
Dotted Swisses	212	67	190	63	369	115
Ginghams, two or more colors, 20 to 59 average yarn numbers	1,260	362	329	138	470	159
Total	95,220	22,405	51,197	13,163	53,463	12,847
Total cotton-cloth imports through all customs districts	109,249	26,424	60,680	16,258	63,002	15,596

Source: Bureau of Foreign and Domestic Commerce.

WOOL AND WOOL MANUFACTURES

SUMMARY.—Raw-wool production in the United States was estimated at 328,137,000 pounds in 1927, an increase of 5.7 per cent over 1926. Imports of wool totaled 264,430,000 pounds, or 17 per cent less than in 1926. Reexports of foreign wool amounted to 10,711,000 pounds, a decrease of 24 per cent, compared with 1926. Reported consumption of wool, based on returns from mills estimated to represent about three-quarters of the entire wool-manufacturing industry, reached 477,118,000 pounds, an increase of 9 per cent over 1926. Activity of wool machinery showed slight changes in 1927 as compared with 1926. Operation of woolen spindles and narrow looms increased, while that of worsted spindles and wide looms declined. Carpet and rug loom activity was 64 per cent of single-shift capacity in both 1926 and 1927. Prices of raw wool declined slightly from February to May and advanced gradually in the latter half of the year. Yarn prices followed the general trend of wool prices, while cloth prices were fairly steady throughout 1927.

PRODUCTION

Production of raw wool.

Domestic production of wool during 1927 was estimated by the Department of Agriculture at 328,137,000 pounds, which comprised 278,037,000 pounds of fleece wool and 50,100,000 pounds of pulled wool. The total represents an increase of 5.7 per cent over the revised figures for 1926 and of 12 per cent over those for 1925. Since 1922 Texas has led all States in the amount of wool produced, its clip totaling 32,675,000 pounds in 1927, a gain of 20 per cent compared with 1926. Wyoming ranked second, being credited with 25,000,000 pounds, and Montana was third with 24,229,000 pounds in 1927, a reversal of their positions in 1926. Ohio, the only middle western State among the 10 largest wool producers, has been in seventh place since 1925. Slightly more than half of the 1927 wool clip was produced in the nine States separately listed in Table 17. United States totals are given in Table 23.

Table 17.—Wool Production, by Leading States

[In thousands of pounds]

Leading producing State	1914	1924	1925	1926	1927 [1]
Texas	8,643	24,806	25,280	27,297	32,675
Wyoming	28,476	19,090	21,362	22,338	25,000
Montana	30,177	19,522	20,640	23,320	24,229
California	11,480	18,250	19,912	20,276	21,540
Utah	13,100	17,970	18,010	19,430	19,975
Oregon	15,763	15,840	16,958	18,321	18,128
Ohio	13,844	14,167	14,467	14,760	15,662
Idaho	14,792	14,450	14,309	14,507	15,120
New Mexico	19,077	11,224	11,084	12,060	12,600

[1] Figures are preliminary and subject to revision.

Source: Bureau of Agricultural Economics, Department of Agriculture.

Census Statistics of Wool Manufactures.

The wool-manufactures group comprises five industries, of which worsted goods, woolen goods, and carpets and rugs are the most important. Census statistics for 1927 are not yet available, but in 1925 the total value of wool manufactures produced in the United States was $1,199,417,000, a decrease of 8.6 per cent compared with 1923, the highest year on record. In quantity the 1925 production was also less than that of 1923.

Production of the Principal Classes of Wool Manufactures.

The production of practically all classes of wool manufactures was smaller in 1925 than in 1923. (Table 19.) The output of woven goods was less by 48,229,000 square yards, or 7.7 per cent, than in 1923, while that of carpets and rugs declined by 11,141,000 square yards, or 13 per cent. The value of the 1925 production of woven goods was 9.6 per cent less than in 1923, whereas the value of carpet and rug production was only 4.8 per cent smaller.

Chart V.—PRODUCTION OF WOVEN GOODS IN THE WOOLEN AND WORSTED GOODS INDUSTRIES

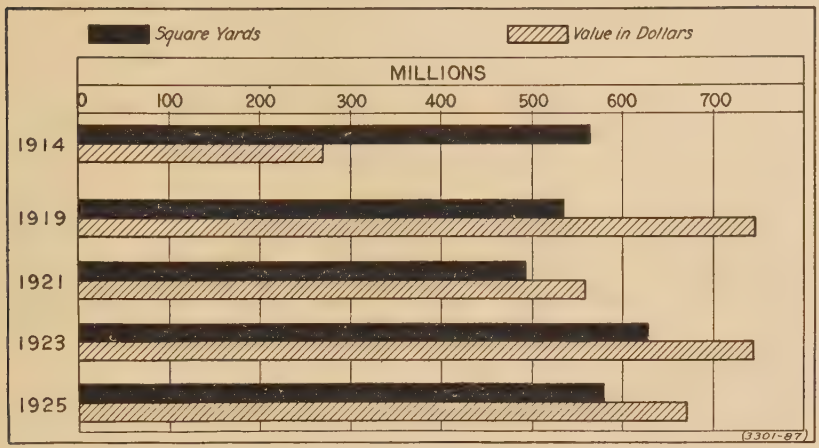


Table 18.—Wool-manufacturing Industries

Industry and year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				In thousands of dollars			
The group as a whole:							
1899	1,414	159,108	270,561	57,934	181,159	296,990	115,831
1909	1,124	202,029	393,668	87,963	322,441	507,167	184,726
1914	979	195,285	435,474	93,358	298,063	464,250	166,186
1919	1,016	196,404	522,917	198,586	759,193	1,234,657	475,464
1921	961	190,894	(1)	209,573	463,849	888,558	424,709
1923	1,004	237,454	615,601	280,153	748,556	1,312,719	564,163
1925	973	206,110	659,331	243,043	756,074	1,199,417	443,343
Woolen and worsted goods:							
1899	1,221	125,901	234,660	44,850	148,087	238,745	90,657
1909	911	163,192	348,283	69,727	273,439	419,744	146,305
1914	799	158,692	375,573	75,953	246,497	379,484	132,988
1919	852	166,787	466,219	168,109	665,595	1,065,434	399,839
1921	814	162,364	(1)	174,895	400,046	755,584	355,538
1923	851	194,552	538,465	222,985	622,732	1,062,558	439,827
1925	832	165,224	570,295	191,271	620,402	957,790	337,388
Woolen goods alone:							
1923	513	72,408	180,657	87,314	201,547	364,288	162,740
1925	503	67,056	193,080	82,436	219,618	361,524	141,906
Worsted goods alone:							
1923	338	122,144	357,808	135,671	421,184	698,271	277,086
1925	329	98,168	377,215	108,835	400,784	596,266	195,483
Carpets and rugs: [2]							
1899	133	28,411	26,271	11,121	27,229	48,192	20,964
1909	139	33,307	37,194	15,536	39,563	71,188	31,625
1914	97	31,309	42,794	14,716	42,280	69,128	26,848
1919	75	22,933	37,593	24,216	67,118	123,254	56,136
1921	72	22,922	(1)	28,705	50,118	103,881	53,762
1923	79	35,217	53,852	48,528	97,473	199,481	102,008
1925	69	33,886	63,008	43,383	104,196	188,903	84,707
Felt goods:							
1923	53	5,735	20,522	6,635	23,895	42,037	18,142
1925	50	5,146	23,478	6,404	26,354	43,776	17,421
Wool-felt hats:							
1923	21	1,950	2,762	2,005	4,457	8,643	4,186
1925	22	1,854	2,550	1,986	5,123	8,949	3,826

[1] Not called for in schedule for 1921.

[2] Not including carpets and rugs made of rags.

Source: Bureau of the Census.

Table 19.—Production of Principal Classes of Wool Manufactures [1]

[Quantity in thousands of square yards, except wool-felt hats which are in thousands of dozens; yarns, tops, and noils are in thousands of pounds; value in thousands of dollars]

Class	Quantity				Value			
	1914	1921	1923	1925	1914	1921	1923	1925
Total value					464,250	888,558	1,312,719	1,199,417
PIECE GOODS AND BLANKETS								
All-wool woolens	90,950	132,286	172,028	153,323	55,661	156,551	231,211	198,964
All-wool worsteds	222,421	185,359	210,988	179,163	141,778	279,913	333,959	275,617
Wool and cotton mixtures	31,400	18,490	24,732	26,124	11,711	14,271	26,261	25,943
Cotton-warp woolens	53,509	44,363	63,203	60,934	13,598	22,665	37,002	40,029
Cotton-warp worsteds	56,763	43,151	41,188	41,379	15,563	27,781	28,801	25,749
Flannels	23,264	9,001	12,775	8,876	4,784	4,729	6,351	4,388
Satinets and linseys	8,415	4,523	6,107	11,877	1,535	1,525	2,278	4,244
Blankets, all-wool	6,490	6,754	11,872	11,084	4,187	6,505	9,321	10,989
Blankets, cotton-mixed	3,937	3,499	8,854	8,098	2,068	2,575	5,286	5,175
Blankets, cotton-warp	17,974	9,296	12,187	15,070	3,010	6,073	6,138	7,411
Upholstery goods and sundries	(2)	(2)	9,538	17,162	2,042	7,933	21,486	34,114
All other woolen and worsted woven goods	50,338	37,038	54,546	46,699	14,785	28,094	37,174	40,946
Total [3]	565,462	493,760	628,018	579,789	270,722	558,613	745,268	673,569
ALL OTHER PRODUCTS								
Yarns for sale	132,560	125,616	179,455	151,000	85,872	161,080	252,242	210,692
Tops and slubbing	8,985	10,341	21,120	18,055	4,927	7,436	23,927	23,613
Noils and wool waste	50,395	40,647	55,110	42,591	10,140	9,577	19,297	17,887
All other products of the woolen and worsted goods industry					4,387	5,735	8,303	20,909
Contract work					3,437	13,142	13,522	11,120
Carpets and rugs	66,340	52,906	83,242	72,101	64,683	100,038	192,157	183,008
Felt goods					13,693	24,129	42,037	43,776
Wool-felt hats, hat bodies, and hats in the rough	387	336	513	558	1,790	4,294	7,661	7,688
All other products					4,599	4,513	8,305	7,156

[1] Production figures in each case are only those of the branch of the wool industry to which the products in question normally belong. For instance, woolen and worsted woven goods produced in carpet and rug factories are not included under those classifications.

[2] Figures not available.

[3] Not including the quantity of "Upholstery goods and sundries" for the years 1914 and 1921; values for these years, however, are included in the total value of piece goods and blankets.

Source: Bureau of the Census.

Table 20.—Activity of Wool Machinery

NOTE.—The percentage of hourly activity represents the ratio of the hours actually run by machinery, taking account of double-shift, part-time, and overtime operation, to the total number of hours which would be possible if all machinery operated at the maximum single-shift capacity; the percentage of machinery active is based on monthly reports, any machine active at any time during the month being counted, and no account being taken of variations in the number of days or hours worked. There are small variations from month to month in the completeness of the reports which may slightly affect the accuracy of the percentages. The following statistics are based on reports from 1,134 mills in 1923, 1,084 in 1924, 1,098 in 1925, 1,104 in 1926, and 1,082 in 1927.

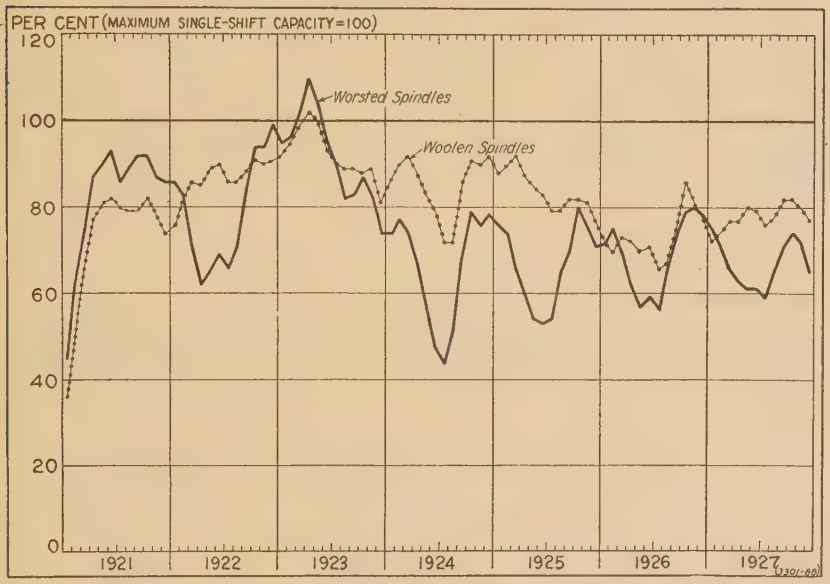
Monthly average	Per cent of reporting machines active					Hours worked, per cent of maximum single-shift capacity				
	Spinning spindles		Looms			Spinning spindles		Looms		
	Woolen	Worsted	Wide	Narrow	Carpet and rug	Woolen	Worsted	Wide	Narrow	Carpet and rug
1919	84	79	71	72	57					
1920	67	74	64	70	67					
1921	72	84	71	71	56	72	82	70	64	52
1922	83	78	69	72	80	86	79	68	65	77
1923	86	88	81	83	86	92	92	83	76	82
1924	80	69	70	77	75	85	66	69	62	66
1925	79	69	69	72	75	84	66	69	64	72
1926	72	70	62	67	68	73	69	63	61	64
1927	74	68	60	67	66	78	67	62	63	64

Source: Bureau of the Census.

Activity of Wool Machinery.

The percentage of activity of wool machinery (based upon hours actually worked as affected by part time or overtime and by idleness as compared with the number of hours possible if all machinery operated at full single-shift capacity) showed slight changes in 1927 as compared with 1926. Comparing annual totals, operation of woolen spindles increased from 73 per cent in 1926 to 78 per cent in 1927, while that of worsted spindles declined from 69 per cent to 67

Chart VI.—ACTIVITY OF WOOL MACHINERY: HOURS WORKED, PER CENT OF MAXIMUM SINGLE-SHIFT CAPACITY



per cent. Looms wider than 50 inches operated at 62 per cent of capacity, as against 63 per cent in the previous year, while activity of narrow looms increased from 61 per cent in 1926 to 63 per cent in 1927. Carpet and rug loom activity was 64 per cent in both 1926 and 1927. (Table 20.)

Activity in the various branches of the wool-manufacturing industry fluctuated during 1927. Maximum activity (based on hours worked) was registered in January by worsted spindles and wide looms, in June and October by narrow looms, in September and October by woolen spindles, and in December by carpet and rug looms.

Table 21.—Activity of Wool Machinery by Months [1]

[An asterisk (*) indicates the minimum and a dagger (†) the maximum month of each year]

Month	Hours worked, per cent of maximum single-shift capacity												
	Spinning spindles						Wide looms			Narrow looms		Carpet and rug looms	
	Woolen			Worsted									
	1925	1926	1927	1925	1926	1927	1925	1926	1927	1926	1927	1926	1927
January	88	72	*72	76	72	†75	†76	67	†68	63	65	68	65
February	90	70	74	74	75	71	75	63	64	62	62	†70	64
March	†92	73	77	66	70	66	71	62	61	61	63	†70	66
April	87	72	77	60	62	63	68	59	57	62	60	63	67
May	85	70	80	54	57	61	66	57	58	57	61	57	67
June	83	71	79	*53	59	61	65	57	60	57	†67	58	64
July	79	*66	76	54	*56	*59	*61	*53	*56	*53	*58	*55	*56
August	79	67	78	65	66	65	63	56	59	55	65	60	57
September	82	76	†82	70	74	71	69	64	64	57	65	62	65
October	82	†86	†82	†80	79	74	72	71	66	†68	†67	65	64
November	81	81	80	75	†80	72	74	†73	66	67	64	67	67
December	*76	77	77	71	78	65	70	72	63	67	*58	65	†68

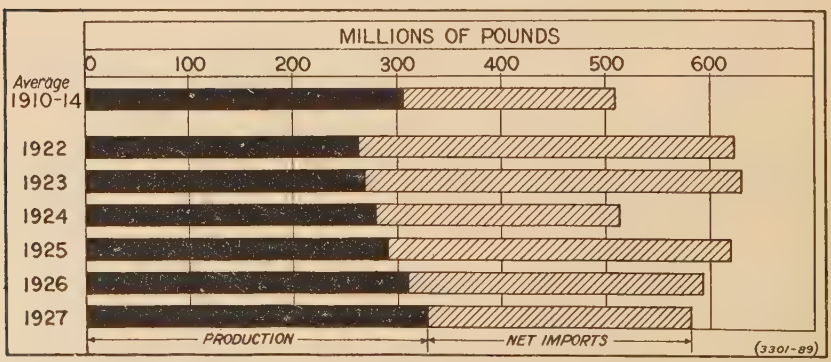
[1] See headnote to Table 20.

Source: Bureau of the Census.

Wool Consumption.

The quantity of raw wool consumed during 1927, as reported by manufacturers to the Bureau of the Census, amounted to 477,118,000 pounds, an increase of almost 9 per cent over 1926, and of 6 per cent

Chart VII.—WOOL AVAILABLE FOR CONSUMPTION—PRODUCTION AND NET IMPORTS



over 1925. These figures are for wool in the condition purchased—scoured and pulled, as well as greasy. The grease equivalent of the total consumption in 1927 was 551,528,000 pounds and in 1926 was 510,033,000 pounds. Figures are reduced to grease equivalent by multiplying scoured wool by 2 and pulled wool by 1⅓. In 1927 the wool consumed (grease basis) comprised 311,505,000 pounds of domestic wool and 240,023,000 pounds of foreign wool, compared

with 248,525,000 pounds and 261,508,000 pounds, respectively, in 1926. The foregoing statistics on wool consumption, as well as those in Table 22, were compiled from reports of mills which are estimated to represent about 75 per cent of the entire wool-manufacturing industry.

Table 22.—Consumption of Raw Wool by Textile Mills

NOTE.—These statistics were compiled from monthly reports received from varying number of mills which are estimated to represent about 75 per cent of the wool-manufacturing industry. Quantities are in thousands of pounds, grease equivalent. An asterisk (*) indicates the minimum and a dagger (†) the maximum month of each year.

Month	1923	1924	1925	1926	1927	Month	1923	1924	1925	1926	1927
Total	641, 607	537, 760	526, 285	510, 033	551, 528	June	52, 649	*30, 972	*38, 176	38, 249	45, 006
						July	46, 347	33, 778	40, 781	38, 236	39, 833
January	†63, 348	53, 845	†51, 435	41, 446	46, 389	August	48, 233	40, 064	42, 149	40, 859	46, 504
February	57, 916	50, 633	46, 415	40, 492	45, 938	September	46, 616	45, 638	44, 383	45, 770	48, 153
March	62, 859	47, 630	45, 853	43, 932	54, 262	October	51, 815	†54, 854	47, 327	†49, 072	49, 122
April	56, 411	44, 361	43, 287	40, 093	43, 971	November	50, 279	48, 380	43, 471	47, 808	46, 322
May	59, 682	36, 507	38, 246	*36, 237	44, 338	December	*45, 452	51, 098	44, 762	47, 839	41, 691

Source: Bureau of the Census.

Table 23.—Wool Produced, Imported, Exported, and Retained for Consumption; Values of Imports of Raw Wool and Wool Manufactures

NOTE.—Column "retained for consumption" is calculated from the other columns, and, because of overlapping of time periods and the fact that changes in stocks (not available before 1918) are not taken into account, may bear no close relation to actual mill consumption during the year. Production represents wool in the grease and pulled wool; imports and exports represent wool in condition in which actually imported or exported, mainly in the grease.

Yearly average or year [1]	Production	Domestic exports	Imports [2]	Foreign exports	Total retained for consumption	Foreign, per cent of total retained	Imports (values)	
							Raw wool	Wool manufactures
	Thousands of pounds						Thousands of dollars	
1871–1880	187, 093	152	68, 030	3, 939	251, 032	25. 5	12, 828	38, 123
1881–1890	280, 083	115	93, 194	4, 294	369, 868	24. 0	13, 531	43, 292
1891–1895	309, 409	1, 077	142, 319	3, 637	447, 014	31. 0	18, 130	34, 531
1896–1900	275, 154	3, 244	189, 445	6, 015	455, 340	40. 3	26, 212	29, 496
1901–1905	298, 713	257	174, 035	2, 998	469, 493	36. 4	24, 687	17, 429
1906–1910	312, 026	133	212, 371	4, 374	519, 890	40. 0	40, 132	21, 285
1911–1915	298, 937	1, 714	215, 354	4, 562	508, 015	41. 5	42, 337	22, 777
1916–1920	290, 918	3, 568	399, 980	4, 276	683, 054	57. 9	175, 746	28, 045
1921–1925	277, 455	700	334, 158	12, 779	598, 134	53. 7	100, 168	64, 601
1921	283, 629	1, 927	316, 605	1, 552	596, 755	52. 8	59, 474	51, 265
1922	263, 713	453	366, 538	4, 225	625, 573	57. 9	83, 096	59, 414
1923	268, 196	535	388, 345	23, 557	632, 449	57. 7	126, 891	69, 118
1924	279, 375	309	262, 655	27, 476	514, 245	45. 7	90, 697	69, 310
1925	292, 362	273	336, 646	7, 087	621, 648	53. 0	140, 683	73, 901
1926	310, 576	292	299, 451	14, 074	595, 661	47. 0	101, 389	70, 667
1927	328, 137	323	264, 430	10, 711	581, 534	53. 7	81, 754	78, 775

[1] Prior to 1916 data are for fiscal years ended June 30; thereafter calendar years.
[2] Imports and reexports prior to 1915 and exports for 1922 and subsequent years include hair of the came Angora goat, alpaca, and other like animals.

Sources: Production, 1896–1913, reports of the National Association of Wool Manufacturers, Boston; other years, reports of the Bureau of Agricultural Economics, Department of Agriculture; imports and exports, Bureau of Foreign and Domestic Commerce.

Of the wool consumption covered by actual reports (based on wool in the condition purchased), carpet wools, which are practically all of foreign origin, aggregated 128,918,000 pounds in 1927; fine wools

(64s, 70s, and 80s) 120,153,000 pounds; and one-half blood (58s and 60s) 56,268,000 pounds, increases of 8.3 per cent, 17 per cent, and 9.6 per cent, respectively. Consumption of one-quarter blood (48s and 50s) amounted to 67,948,000 pounds in 1927, and of three-eighths blood (56s) totaled 67,322,000 pounds, slightly smaller amounts than in 1926.

Stocks of wool in and afloat to the United States, according to the joint reports of the Bureau of the Census and the Department of Agriculture (which did not include returns from 7 dealers and 14 manufacturers operating 61 mills in 1927 and 25 dealers and 19 manufacturers operating 68 mills in 1926), amounted to 230,040,000 pounds on December 31, 1927, as compared with 245,400,000 pounds at the close of 1926, a decline of 15,360,000 pounds. Domestic wool accounted for 145,251,000 pounds and foreign wool for 84,789,000 pounds of the stocks held at the end of 1927, an increase of 10,709,000 pounds for the former but a decline of 26,069,000 for the latter, as compared with stocks on December 31, 1926.

PRICE MOVEMENT AND MARKET CONDITIONS

Raw-wool prices in 1927 declined slightly from February to May on practically all grades of domestic grease wool, including Ohio fine delaine, Ohio one-quarter blood, fine staple territory, and territory one-half blood combing. From June to December prices showed a gradual increase. Ohio, Pennsylvania, and similar fleece wool of about 56s or three-eighths grade in the grease was quoted at an average price of 46 cents per pound in January, dropped to 43 cents in May, and increased gradually to 49 cents in December. Fine staple choice territory, scoured basis, was quoted at an average price of $1.08 during the first five months of 1927; the price increased to $1.13 in July, stood at $1.12 for the next four months, and again advanced to the high of the year ($1.14) in the last quarter.

Yarn prices followed the general price trend of raw wool; worsted yarns, 2/32s, of crossbred stock, were quoted at $1.375 per pound in January, and decreased to $1.325 during May and June. There was a gradual price improvement during the remainder of the year, which carried the quotation to $1.40 in December.

Wool-cloth quotations were fairly steady throughout 1927. For example, the price of women's dress goods (all wool, 54–56 inch, 9½-ounce broadcloth) was $2.255 per yard during the first nine months of the year and advanced slightly in the last quarter. Wool-dyed, blue, 16-ounce, 55–56 inch Middlesex suiting was quoted at $3.285 throughout 1927.

Table 24.—Prices of Raw Wool, Worsted Yarn, and Wool Cloths

[Prices of wool and yarn per pound, of cloth per yard]

Year	Raw wool		Worsted yarn [3]	Wool cloths	
	Ohio [1]	Territory [2]		Dress goods [4]	Suitings [5]
1910	$0.31	$0.65	$0.869	-------	-------
1911	.26	.57	.788	-------	-------
1912	.29	.64	.828	-------	$1.523
1913	.26	.56	.777	-------	1.545
1914	.26	.59	.640	-------	1.459
1915	.36	.71	.788	-------	1.564
1916	.42	.84	1.050	-------	1.974
1917	.67	1.57	1.556	-------	3.158
1918	.77	1.82	2.109	$3.054	4.040
1919	.67	1.78	1.627	3.451	4.009
1920	.53	1.60	1.825	3.676	4.179
1921	.28	.85	1.179	2.321	2.933
1922	.46	1.25	1.413	1.976	3.101
1923	.56	1.41	1.729	2.257	3.623
1924	.57	1.42	1.692	2.453	3.660
1925	.58	1.40	1.721	2.670	3.660
1926	.48	1.15	1.435	2.360	3.394
1927	.46	1.10	1.367	2.292	3.285

Quarter	Raw wool		Worsted yarn [3]	Wool cloths	
	Ohio [1]	Territory [2]		Dress goods [4]	Suitings [5]
1925					
Jan.–Mar.	$0.69	$1.63	$1.867	$2.659	$3.780
Apr.–June	.54	1.32	1.750	2.674	3.660
July–Sept.	.54	1.32	1.667	2.674	3.600
Oct.–Dec.	.56	1.31	1.600	2.674	3.600
1926					
Jan.–Mar.	.53	1.25	1.533	2.674	3.570
Apr.–June	.46	1.13	1.416	2.255	3.435
July–Sept.	.45	1.12	1.400	2.255	3.285
Oct.–Dec.	.47	1.11	1.392	2.255	3.285
1927					
Jan.–Mar.	.46	1.08	1.375	2.255	3.285
Apr.–June	.44	1.08	1.333	2.255	3.285
July–Sept.	.45	1.12	1.358	2.255	3.285
Oct.–Dec.	.49	1.13	1.400	2.402	3.285

[1] Raw wool, Ohio, Pennsylvania, and West Virginia, ⅜-blood, combing, unwashed, Boston.
[2] Raw wool, fine territory, scoured, staple, choice, Boston.
[3] Worsted yarn, 2/32s crossbred stock, white; mill prices.
[4] Broadcloth, all-wool, 54–56 inches, 9½-ounce; mill prices.
[5] Suitings, wool-dyed, blue, 16-ounce, 55 to 56 inch, Middlesex; mill prices.

Sources: Raw-wool prices from Bureau of Agricultural Economics, Department of Agriculture; yarn and fabric prices from Bureau of Labor Statistics, Department of Labor.

WAGES AND HOURS OF LABOR

Woolen and Worsted Goods Industry, 1924 and 1926.

A study of wages, hours, and earnings in 1926 in the woolen and worsted goods industry in the United States was recently made by the Department of Labor. The information was obtained from 112 representative mills in the principal wool-manufacturing States, with the exception of New Jersey, which was not included because of its unsettled labor conditions. Data were included for 22,152 males and 17,818 females, and to provide a basis for comparison similar data for 1924 were used for 23,248 males and 18,374 females.

This survey showed that average earnings per hour of males in all occupations decreased from 57.8 cents in 1924 to 54.5 cents in 1926 and those of females from 46.7 cents to 41.8 cents. Average full-time earnings per week of males in all occupations combined decreased from $28.44 in 1924 to $26.87 in 1926 and those of females from $22.84 to $20.61.

In 1924 the highest average earnings per hour for males were those of loom fixers, 87 cents, and the lowest were those of doffers, 30.1 cents. In 1926, also, the two extremes of average earnings per hour for males were held by these two occupations, their earnings being 80.7 and 28 cents, respectively. The average hourly earnings of females ranged from 31.5 cents in 1924 for doffers to 65.4 cents for weavers and in 1926 from 28 cents for doffers to 69.8 cents for wool sorters.

FOREIGN TRADE

Raw-Wool Imports and Reexports.

Imports of raw wool in 1927, exclusive of mohair, alpaca, etc., totaled 264,430,000 pounds, as compared with 299,451,000 in 1926, a decrease of 17 per cent. Imports in 1927 comprised 144,256,000 pounds of carpet wool, 102,714,000 pounds of combing wool, and 17,461,000 pounds of clothing wool. These figures represent increases of 25 per cent and 15 per cent in imports of carpet wool and clothing wool, respectively, but a decline of 39 per cent in imports of combing wool. Reexports of foreign wool amounted to 10,711,000 pounds in 1927, a decline of 24 per cent.

The chief sources of the 1927 imports of raw wool were the United Kingdom, China, Australia, Argentina, Uruguay, British India, Canada, Palestine and Syria, New Zealand, and British South Africa. The figures shown in Table 25 include for each country not only the wool originating in that country but also that coming indirectly from other countries, while Table 26 shows the origin of the imported wool. Imports from producing countries showed the following declines between 1926 and 1927: British South Africa, 63 per cent; United Kingdom, 29 per cent; Argentina, 26 per cent; and Australia, 25 per cent. Imports of carpet wool from China more than doubled in 1927 and those from India increased about one-quarter.

Table 25.—Imports of Raw Wool by Classes and Principal Countries of Immediate Shipment

Class and country	Quantity (thousands of pounds)					Values (thousands of dollars)				
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
Carpet wool	122,399	140,960	157,971	115,521	144,256	26,304	34,175	47,233	30,103	37,470
Clothing wool	30,851	17,785	23,479	15,222	17,461	11,406	8,129	10,908	5,371	6,020
Combing wool	235,095	103,910	155,197	168,708	102,714	89,181	48,393	82,543	65,915	38,265
Total	388,345	262,655	336,646	299,451	264,430	126,891	90,697	140,683	101,389	81,754
United Kingdom	96,238	69,072	[1]77,388	[1]71,041	[1]61,237	32,062	24,929	[1]29,093	[1]21,489	[1]18,625
Argentina	70,623	32,416	36,582	40,334	27,589	19,470	10,936	15,097	12,519	7,068
Uruguay	38,560	8,607	26,301	32,767	16,871	14,684	3,547	13,425	12,845	5,257
British India	4,451	3,462	8,330	5,512	9,294	1,101	863	2,726	1,580	2,591
Canada	6,829	6,658	7,259	4,838	9,031	2,020	2,693	2,765	1,461	2,544
China	51,651	65,840	63,786	22,872	48,280	10,720	14,411	17,618	5,906	11,328
Palestine and Syria	3,131	5,912	7,462	6,831	8,582	849	1,647	2,636	1,915	2,768
Australia	53,630	35,384	55,654	51,188	39,389	26,325	20,554	35,919	24,546	18,851
New Zealand	13,559	5,865	10,675	18,452	5,466	4,095	1,926	5,400	5,636	1,659
British South Africa	14,861	4,956	8,028	13,776	5,636	5,882	2,669	3,720	5,227	2,145
All other	34,810	24,481	35,181	31,841	33,055	9,683	6,521	12,283	8,265	8,919

[1] Excluding imports from the Irish Free State.

Source: Bureau of Foreign and Domestic Commerce.

Table 26.—Imports of Wool Into United States, by Principal Countries of Production, 1927

[In thousands of pounds]

Country of production	Carpet wool	Clothing wool	Combing wool	Country of production	Carpet wool	Clothing wool	Combing wool
Total	144,256	17,461	102,714	China	49,580	----------	5
				Chile	9	1,399	749
Argentina	10,328	2,619	16,377	New Zealand	----------	1,231	13,736
Australia	----------	5,169	36,647	Syria	9,608	----------	----------
British India	26,696	3	----------	United Kingdom	15,333	3,097	6,645
British South Africa	46	353	4,841	Uruguay	42	463	16,370
Canada	9	2,824	5,933	All other	32,605	302	1,412

Source: Bureau of Foreign and Domestic Commerce.

Wool Manufactures.

Imports of wool semimanufactures and manufactures in 1927 amounted to $78,775,000, an increase of 11 per cent, compared with 1926. The principal gains were recorded in wool rags, noils, and wastes, wool fabrics, and wool wearing apparel. Imports of carpets and rugs during 1927 were valued at $21,503,000, of which 32 per cent came from Persia and 19 per cent from China. In 1926 the shares of these two countries were 35 per cent and 26 per cent, respectively. Other important sources of imported carpets and rugs are the United Kingdom, British India, European and Asiatic Turkey, and Greece. Imports of worsted fabrics in 1927 were valued at $2,457,000, practically all of which the United Kingdom supplied. The United Kingdom also dominated the import trade in woolens, having furnished three-fourths of a total importation from all countries, valued at $19,601,000 in 1927. France and Germany sent woolens valued at $2,470,000 and $1,417,000, respectively, to the United States in 1927.

Exports of wool manufactures were valued at $5,159,000, a gain of about 4 per cent over 1926. Slight gains were recorded in the values of all classifications except wool wearing apparel, which declined 4 per cent.

Table 27.—Imports and Exports of Wool Semimanufactures and Manufactures

NOTE.—Where values are not shown for specified classes, figures are included in "All other wool manufactures." Quantities in thousands of pounds, except carpets and rugs, which are in thousands of square yards; values in thousands of dollars.

Article	Quantity					Value				
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
Imports, total						**69,118**	**69,310**	**73,901**	**70,667**	**78,775**
Wool advanced, including tops	3,905	530	326	99	236	2,553	448	269	59	417
Mohair yarns [1]		1,133	416	327	115		1,400	516	372	130
Wool yarns [1]	6,336	1,783	717	337	174	8,294	2,760	1,156	534	349
Rags, noils, wastes, etc	27,109	33,625	35,614	29,046	32,998	11,270	16,327	16,476	10,509	13,683
Mohair fabrics	122	74	109	40	119	243	152	247	79	226
Wool fabrics	11,350	11,865	10,485	10,290	11,133	21,004	20,694	21,754	20,920	22,264
Carpets and rugs	2,646	2,804	2,939	3,292	3,282	13,952	15,153	18,333	21,099	21,503
Wool wearing apparel						9,127	9,564	13,081	14,644	16,869
All other manufactures						2,675	2,811	2,068	2,453	3,333
Exports, total						**8,733**	**7,090**	**5,873**	**4,979**	**5,159**
Rags, noils, wastes, etc	11,752	17,861	8,998	11,060	15,109	856	1,352	808	965	1,114
Wool and mohair fabrics	1,032	637	547	433	439	2,347	1,332	1,133	872	896
Carpets and rugs	92	81	59	96	81	258	222	207	282	332
Wool wearing apparel						2,845	2,776	2,327	1,748	1,670
All other manufactures						2,428	1,409	1,398	1,111	1,147

[1] Mohair yarns were included under wool yarns prior to Jan. 1, 1924.

Source: Bureau of Foreign and Domestic Commerce.

KNIT GOODS

SUMMARY.—Production of hosiery, as reported by mills representing slightly more than 60 per cent of the entire hosiery industry, increased about 4 per cent in quantity in 1927, as compared with 1926. The greatest expansion took place in the production of women's full-fashioned pure-thread silk hosiery, which recorded a gain of 21 per cent over 1926. Production of underwear by mills comprising about 60 per cent of the entire industry registered slight gains in some lines and losses in others in 1927, as compared with 1926. The year was characterized by hand-to-mouth buying of hosiery and underwear on the part of both wholesalers and retailers, who were unwilling to carry large stocks, chiefly on account of rapid changes in styles. The 1927 consumption of rayon by the knit-goods industry is placed at 45,723,000 pounds, an increase of 66 per cent over 1926. Wholesale prices of hosiery and underwear in 1927 were lower than in 1926. Total exports of all classes of knit goods showed a decrease of 13 per cent and imports a gain of about 9 per cent.

Census Statistics of the Industry.

The classification "knit goods" embraces the output of all establishments whose principal products are made by machine knitting, without regard to whether the yarns used are cotton, wool, silk, or other material. The knitting machinery employed is, in the main, power-driven. The industry has expanded greatly within recent years, as is evidenced by the figures showing the value of products. In 1914 the value of products of knit-goods establishments was $258,913,000, which increased to $634,074,000 in 1921 and to $848,177,000 in 1923, but decreased slightly in 1925, the latest year for which census statistics are available, to $809,960,000. With the exception of the knit outerwear branch, this decline is the result of lower prices and not of reduced production. The decrease in the number of establishments reporting is somewhat misleading, as a number of mills have consolidated. The quantity and value of the output of the principal classes of knit goods in recent census years is shown in Table 29.

Table 28.—Knit-Goods Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899	1,006	83,691	56,031	$24,434,497	$51,195,330	$95,833,692	$44,638,362
1909	1,374	129,275	101,319	44,740,223	110,241,053	200,143,527	89,902,474
1914	1,622	150,520	122,919	59,758,151	146,687,458	258,912,903	112,225,445
1919	2,050	172,572	149,438	125,199,820	427,095,570	713,139,689	286,044,119
1921	2,078	161,880	(1)	132,190,349	360,457,833	634,073,895	273,616,062
1923	2,323	194,244	183,675	168,271,584	484,020,075	848,176,734	364,156,659
1925	1,987	186,668	176,630	168,682,840	453,925,780	809,960,213	356,034,433
Per cent change, 1925 from 1923	−14.5	−3.9	−3.8	+0.2	−6.2	−4.5	−2.2

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Table 29.—Production of the Principal Classes of Knit Goods

[Quantity for hosiery, gloves, and mittens, in dozen pairs; underwear and outerwear (including neckties), in dozens of pieces; knit cloth in square yards. All quantities in thousands; values in thousands of dollars]

Article	Quantity				Value			
	1914	1921	1923	1925	1914	1921	1923	1925
Total value					**258, 913**	**634, 074**	**848, 177**	**809, 960**
Hosiery, total	75, 165	80, 241	97, 433	103, 707	98, 099	290, 489	378, 733	411, 366
Cotton	61, 410	50, 894	57, 620	50, 403	59, 631	94, 256	105, 945	87, 784
All wool	1, 986	1, 514	1, 177	639	3, 875	8, 876	8, 157	3, 579
Cotton and wool mixed	3, 059	4, 467	7, 891	4, 235	4, 799	16, 421	25, 353	13, 863
All pure thread silk	3, 660				18, 553			
Full fashioned	(1)	1, 019	1, 739	1, 693	(1)	19, 527	25, 301	24, 085
Seamless	(1)	3, 112	2, 901	443	(1)	24, 684	20, 628	3, 625
Pure thread silk with lisle or cotton tops, heels, and toes—								
Full fashioned	(2)	(2)	(2)	9, 913	(2)	(2)	(2)	114, 825
Seamless	(2)	(2)	(2)	7, 667	(2)	(2)	(2)	55, 100
All rayon	(1)	2, 047	2, 758	556	(1)	7, 067	10, 647	1, 779
Rayon with lisle or cotton tops, heels, and toes	(2)	(2)	(2)	11, 795	(2)	(2)	(2)	35, 896
Silk and rayon	(2)	(2)	(2)	3, 334	(2)	(2)	(2)	18, 527
Silk or rayon mixed with other fibers	5, 050	17, 188	23, 347	9, 098	11, 239	119, 658	182, 702	44, 802
Infants' hose, seamless	(1)	(1)	(1)	3, 930	(1)	(1)	(1)	7, 502
Underwear, total value					**93, 119**	**134, 865**	**160, 902**	**163, 277**
Cotton shirts and drawers	19, 736	10, 283	11, 558	9, 367	43, 098	34, 993	44, 325	36, 822
Other shirts and drawers	2, 023	1, 429	1, 188	1, 895	14, 425	14, 883	17, 358	24, 023
Cotton union suits	5, 469	8, 154	9, 412	10, 249	25, 618	59, 516	74, 130	73, 700
Other union suits	804	1, 130	1, 334	1, 252	9, 978	25, 473	25, 088	25, 515
Infants' underwear	(1)	(1)	(1)	(1)	(1)	(1)	(1)	3, 217
Outerwear, total value					**46, 178**	**137, 005**	**197, 158**	**147, 093**
Sweaters, sweater coats, jerseys, etc	2, 249	2, 748	4, 455	3, 714	26, 195	69, 426	111, 159	84, 899
Bathing suits	274	909	972	695	2, 034	11, 202	17, 554	16, 322
Neckties	(1)	1, 757	3, 324	2, 705	(1)	9, 137	12, 317	8, 961
Gloves and mittens	2, 470	2, 685	2, 094	1, 301	10, 520	25, 209	16, 768	9, 083
Athletic or golf hose	(1)	(1)	(1)	573	(1)	(1)	(1)	3, 959
Infants' sets	(1)	(1)	(1)	(1)	(1)	(1)	(1)	9, 064
Other outerwear	(1)	(1)	(1)	(1)	7, 429	22, 031	39, 360	14, 806
Knit cloth, total value					(3)	45, 299	68, 521	55, 454
Jersey cloth	(3)	29, 911	26, 054	27, 979	(3)	25, 983	29, 688	26, 674
Tricolette	(3)	8, 201	12, 650	14, 192	(3)	9, 430	13, 679	9, 777
Other knit cloth	(3)	(1)	(1)	(1)	(3)	9, 886	25, 153	19, 003
Contract work	(1)	(1)	(1)	(1)	**3, 649**	**6, 862**	**13, 498**	**10, 580**
All other products	(1)	(1)	(1)	(1)	**17, 868**	**19, 555**	**29, 366**	**22, 190**

[1] Figures not available.
[2] Included under the class "silk or rayon mixed with other fibers" prior to 1925.
[3] No comparable data available, but production in 1914 included 16,816,000 square yards of knit cloth, valued at $5,049,000.

Source: Bureau of the Census.

Production in 1927.

Census figures for 1927 are not yet available, but the Bureau of the Census collects monthly statistics on the production of hosiery from 263 identical establishments, representing 334 mills, which produced 61.7 per cent of the total value of hosiery manufactured in the United States in 1925. The total production for 1927 of all classes of hosiery by these mills amounted to 53,747,000 dozen pairs, 4 per cent more than in 1926. The 1927 output was divided as follows: Men's seamless, 36 per cent; women's full-fashioned, 27 per cent; women's

seamless, 18 per cent; boys' and misses' (all styles), 8.2 per cent; children's and infants' (all styles), 7.6 per cent; athletic hosiery (all styles), 1.6 per cent; and men's full-fashioned, less than 1 per cent. Of the 1927 production of men's seamless hosiery, about one-half consisted of all cotton and most of the remainder of rayon or mixtures of silk and rayon. Practically all of the output of women's full-fashioned hose reported by the mills was pure-thread silk. The production of women's seamless hosiery included 2,214,000 dozen pairs of pure-thread silk, 1,260,000 of rayon, 3,014,000 of mixtures of silk, rayon, etc., and 3,025,000 of all cotton. Compared with 1926, the output of women's pure-thread silk hosiery increased 21 per cent for full-fashioned lines and declined 17 per cent for seamless.

The Bureau of the Census also compiles monthly data on production in the knit-underwear industry. These statistics were based on reports from 134 identical establishments in 1927 and 145 in 1926. These mills produced approximately 60 per cent of the total value of the knit underwear manufactured in the United States in 1925. The figures indicate a decline in the output of knit underwear for women, misses, and boys, but an increase in the production of underwear for men and for children and infants in 1927 as compared with 1926.

Market Conditions and Price Movement.

The knit-goods industry as a whole was in a favorable position in 1927, according to trade reports. Rapidly changing styles led retailers to adhere to a policy of hand-to-mouth buying in an effort to accelerate their turnover. The consumption of rayon in the knit-goods industry, according to reports of sales by the leading American producers, increased from approximately 27,465,000 pounds in 1926 to 45,723,000 in 1927. These figures do not take into account the imports of rayon. Of the 1927 rayon consumption, 24,554,000 pounds were used in knit underwear, 17,781,000 in hosiery, and 3,387,000 in other knit goods.

In the hosiery industry some sections reported a satisfactory volume of business and fair profits, while others reported a restricted turnover and unsatisfactory returns, but 1927, on the whole, was an average year, according to reliable trade sources. Manufacturers of full-fashioned hosiery did a fairly good business in 1927, despite increased production and consequent keener competition. In other lines of hosiery the demand for novelties led mills to operate on a hand-to-mouth basis, while both wholesalers and retailers preferred to place small orders and carry limited stocks. As a result, difficulties and delays were experienced in securing deliveries.

The volume of business in the knit-underwear trade during 1927 was fairly good, but buying was restricted generally to immediate requirements. As a consequence, manufacturers were forced to

curtail production, with resultant increases in manufacturing costs and smaller profits. In women's knit underwear, particularly, the increased production and competition of rayon undergarments reduced the sale not only of cotton underwear but to a lesser degree of silk products. In knit outerwear the principal feature of the year's trade was the revival in the demand for sweaters, which enabled the mills to run much nearer to capacity in 1927 than for a number of years past.

Prices of hosiery, compiled by the Bureau of Labor Statistics, indicate that quotations on cotton hosiery were fairly steady throughout 1927, while prices of silk hosiery declined about the middle of the year. Prices of rayon hosiery fluctuated during the first half of the year, but were steady in the last six months of 1927. Women's pure dyed silk hosiery, full-fashioned, 39-gauge, 10-thread, with high spliced heel and double toe, was quoted at $11.27 per dozen pairs during the first six months of 1927; the price declined to $10.78 in June and continued at that level until December, when it fell to $10.52. The price of women's rayon hosiery (24-inch fiber boot, 220-needle, with combed cotton top, heel, and toe) was $2.65 per dozen pairs during the first three months of 1927, $2.50 in April and May, $2.30 in June, and $2.45 during the last six months of the year. Prices of men's 220-needle, pure-thread silk hose, with mercerized top, heel, and toe, stood at $4.25 during the first five months of 1927, dropped to $4 for June and July, advanced to $4.50 for August and September, and declined to $4.25 in October, at which level it remained during the balance of the year. The average price in 1927 for the foregoing three types of hosiery was: Women's pure dyed silk hosiery, full-fashioned, $11; women's rayon hosiery, $2.50; and men's silk hosiery, $4.25. Comparable data for 1926 are not available on women's rayon hosiery nor on men's silk hosiery, but women's full-fashioned silk hosiery averaged $12.17 in 1926 and $11.84 in 1925. (Table 30.)

Table 30.—Prices of Hosiery and Underwear

NOTE.—Prices are per dozen pairs or garments; they are New York wholesale prices except where otherwise indicated.

Hosiery and underwear	1922	1923	1924	1925	1926	1927
Men's cotton half hose, combed yarn	$1.65	$1.78	$1.80	$1.75	$1.62	$1.59
Women's cotton hosiery, silk mercerized, mock seam	2.73	2.62	2.41	2.38	2.33	2.28
Women's pure dyed silk hosiery, full-fashioned, 39-gauge, 10-thread	13.10	13.25	11.92	11.84	12.17	11.00
Rayon hosiery (average export value)	4.29	4.41	4.42	3.96	3.76	3.37
Silk hosiery (average export value)	9.83	9.98	9.20	8.62	9.37	10.30
Men's cotton shirts and drawers	6.31	7.20	8.13	7.50	6.84	6.23
Merino shirts and drawers, 60 per cent wool	30.17	33.00	33.00	33.00	30.00	28.00
Men's union suits, 33 per cent worsted	27.93	29.40	30.13	30.38	30.38	27.60

Sources: Wholesale prices, Bureau of Labor Statistics, Department of Labor; export values, Bureau of Foreign and Domestic Commerce, Department of Commerce.

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Prices of cotton underwear were steady during the first seven months of the year, after which they showed a tendency to advance. Wool underwear prices were steady throughout 1927, except for a slight decline in January on some types.

Wages and Hours of Labor.

A study of wages and hours of labor of employees in the hosiery and underwear industries in 1926 has been made by the United States Bureau of Labor Statistics. The 1926 study covers 105 hosiery mills, employing 10,250 males and 20,296 females; and 85 underwear mills, employing 2,860 males and 12,188 females. The hosiery mills were located in 18 States and the underwear mills in 15 States. According to the 1923 Census of Manufactures, 94 per cent and 93 per cent, respectively, of the wage earners in the hosiery and underwear industries were located in these States. The wage data presented in the report are for both time workers and piece workers.

In the hosiery industry average full-time hours per week in all occupations were 52.6 for males, 51.5 for females, and 51.9 for males and females combined. Averaged earnings per hour were 67.5 cents for males, 35.8 cents for females, and 47.2 cents for all employees. Average full-time earnings per week were $35.51 for males, $18.44 for females, and $24.50 for males and females combined.

In the underwear industry average full-time hours per week in all occupations were 51 for males, 50.1 for females, and 50.3 for all employees. Average earnings per hour were 47.7 cents for males, 35.2 cents for females, and 37.8 cents for all employees. Average full-time earnings per week were $24.33 for males, $17.64 for females, and $19.01 for males and females combined.

Average earnings per hour in the hosiery industry, by occupations, for males ranged from 33.6 cents for knitters, transfer, to $1.511 for knitters, footers, full-fashioned; and for females ranged from 29.2 cents for inspectors to 56.3 cents for toppers, full-fashioned. In the underwear industry average earnings per hour for males ranged from 39.2 cents for press hands to 71.7 for machine fixers, and for females ranged from 28.7 cents for press hands to 43.2 cents for power cutters. Data for prior years were compiled for the hosiery and underwear industries combined and are, therefore, not easily comparable with 1926.

Foreign Trade.

Exports of knit goods during 1927 were valued at $23,338,000, a decrease of 13 per cent, compared with 1926. Wool knit goods was the only item in this trade to show an increase in 1927 over 1926, a better foreign demand for sweaters and bathing suits accounting for the slight gain. Total exports of hosiery (cotton, rayon, and silk)

dropped in quantity from 6,957,000 dozen pairs in 1926 to 6,288,000 in 1927 and in value from $22,111,000 to $19,302,000. All classifications shared in this decrease, which is attributed to expansion in domestic production of hosiery in some of the United States' foreign markets, advances in tariff rates in other countries, and increasing competition from European producers, particularly Germany.

Shipments to the United Kingdom, which was the United States' best customer for hosiery in 1926, decreased in value by about one-half in 1927 and amounted to only 8.6 per cent of the total; the greatest decline was in silk hosiery. United States' sales of hosiery to both Cuba and Australia in 1927 exceeded those to the United Kingdom, Cuba's share being approximately 11 per cent and Australia's 9.5 per cent of the total exportation. Australia, the leading market for American silk hosiery in 1927, took exports valued at $1,573,000; Argentina, $1,255,000; British South Africa, $997,000; and the United Kingdom, $890,000. In 1927 Cuba's takings of rayon hosiery, amounting to $619,000, far exceeded exports to any other country. Cuba was also the principal export outlet for cotton hosiery from the United States; exports to Cuba reached $1,242,000 in 1927, followed by Canada with $738,000, the United Kingdom with $522,000, and Central America with $521,000.

Imports of knit goods increased in value from $12,889,000 in 1926 to $14,042,000 in 1927; all items, except wool hosiery, which declined 5 per cent in value, showed increases in 1927 as compared with 1926. England supplied the bulk of the wool knit goods imported, while Germany held a dominant position in the trade in cotton knit goods, particularly knitted fabric gloves.

Table 31.—Knit Goods: Exports and Imports

Class	Quantity (1,000 dozen pairs)[1]					Value (thousands of dollars)				
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
Exports, total [2]						25,761	24,627	32,087	26,860	23,338
Cotton underwear						5,025	3,741	3,828	3,214	2,541
Cotton hosiery	5,160	4,826	5,534	4,745	4,337	10,525	9,096	10,494	8,407	7,330
All other cotton knit goods						530	611	677	765	624
Wool knit goods						375	451	544	725	739
Rayon hosiery	1,113	845	1,561	1,252	1,172	4,906	3,732	6,177	4,709	3,952
Silk hosiery	441	755	1,202	960	779	4,399	6,947	10,368	8,995	8,020
Imports, total [2]						10,823	10,808	13,363	12,889	14,042
Cotton knit gloves	1,158	1,365	1,659	2,111	2,190	4,034	4,247	5,488	6,514	6,544
Cotton hosiery	612	531	563	497	528	1,327	1,409	1,942	1,612	1,793
Other cotton knit goods						371	291	294	291	431
Wool hosiery	502	486	529	372	384	2,945	2,924	3,695	2,674	2,539
Other wool knit goods						1,784	1,600	1,609	1,554	2,359
Silk knit and crocheted goods						363	261	268	245	375

[1] Quantity for certain items not available.

[2] Totals include minor items not listed.

Source: Bureau of Foreign and Domestic Commerce.

SILK AND RAYON MANUFACTURES

SUMMARY.—The silk-manufacturing industry increased its activity during 1927, the average monthly deliveries to mills reaching a record total of 46,948 bales, an increase of 12 per cent, compared with 1926. Rayon production showed a 15 per cent gain, mounting from 65,750,000 pounds in 1926 to 75,562,000 pounds in 1927, while the imports for consumption rose from 9,351,000 pounds to 15,679,000 pounds. Raw silk prices fluctuated somewhat during the first part of the year, after which there was a gradual decline, the average price for the year for Kansai No. 1 being lower than for any year since 1916. Imports of raw silk amounted to 74,005,000 pounds, establishing a new high total. Imports of silk manufactures increased 4 per cent, to $42,158,000, while exports decreased 14 per cent to a value of $15,298,000.

Table 32.—Silk and Rayon Industries

Industry, section, and year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
Silk manufactures:							
United States—							
1899	483	65,416	53,565	$20,982,194	$62,406,665	$107,256,258	$44,849,593
1909	852	99,037	92,100	38,570,085	107,766,916	196,911,667	89,144,751
1914	902	108,170	111,417	47,108,469	144,442,321	254,011,257	109,568,936
1919	1,369	126,782	173,748	108,226,330	388,469,022	688,469,523	300,000,501
1921	1,565	121,378	[1]	113,395,626	337,558,799	583,418,756	245,859,957
1923	1,598	125,234	206,020	126,849,454	479,038,263	761,322,119	282,283,856
1925	1,659	132,509	212,609	142,733,539	484,122,527	808,979,399	324,856,872
Paterson, N. J.—							
1921	593	16,666	[2]	17,954,052	48,697,534	87,332,529	38,634,995
1923	614	16,830	[2]	20,482,777	69,687,125	112,100,378	42,413,253
1925	691	16,368	[2]	22,043,617	66,601,152	110,848,379	44,247,227
Rayon (yarns and other products, excluding fabrics):							
1923	8	14,401	25,424	16,383,987	12,093,522	59,051,916	46,958,394
1925	14	19,128	66,966	22,975,605	18,477,965	88,060,962	69,582,997

[1] Not called for in schedule for 1921. [2] Not available.

Source: Bureau of the Census.

Table 33.—Production of the Principal Classes of Silk Goods

Class	Quantity (thousands of units)				Value (thousands of dollars)			
	1914	1921	1923	1925	1914	1921	1923	1925
Total value					**254,011**	**583,419**	**761,322**	**808,979**
Broad silks:								
All-silk, square yards	[1] 142,713	230,903	271,820	384,725	96,690	284,761	332,843	426,000
Silk mixed, do	[1] 73,320	47,508	104,402	98,391	41,030	56,296	123,240	103,121
Velvets, do	[1] 16,318	6,410	9,109	6,078	8,570	16,000	23,880	14,525
Plushes, do	[1] 9,115	5,501	7,117	925	10,136	12,126	17,218	[2] 2,352
Upholstery and tapestry, do	[1] 478	1,276	3,799	2,675	840	3,826	10,636	5,037
Thrown silk for sale (organzine, tram, and crêpe twist), pounds	4,070	6,430	8,433	10,863	16,024	47,071	67,417	71,639
Spun silk for sale, do	1,607	4,737	3,486	3,489	4,577	17,115	14,729	15,203
Machine twist, sewing, and floss silks, pounds	1,562	1,888	1,752	1,624	9,682	17,921	18,190	14,991
Ribbons					38,201	53,598	52,122	52,061
Fringes, gimps, braids, and binding					4,099	22,792	27,834	21,307
All other products, including contract work					24,163	51,912	73,214	82,743

[1] Quantity for 1914 given in linear yards.

[2] In addition 772,881 square yards of silk and silk-mixed plushes, valued at $1,872,500, were reported by establishments engaged primarily in the cotton-goods and woolen-goods industries.

Source: Bureau of the Census.

Census Statistics of the Industry.

Although entirely dependent upon foreign sources for its raw material, the silk manufacturing industry of the United States is by far the largest in the world.

The output of manufactured products during 1925, the last year for which figures are available, was valued at $808,979,000, an increase of 6 per cent over the previous census year 1923. The production in Paterson, N. J., the largest center of the industry, declined slightly, being valued at $110,848,000 in 1925, compared with $112,100,000 in 1923. The production of all-silk fabrics amounted to 384,725,000 square yards in 1925, a gain of 41.5 per cent over 1923.

Production in 1927.

The census figures for 1927 are not yet available, but deliveries of raw silk to the mills indicated that production was greater than in any previous year. The average monthly deliveries during 1927 amounted to 46,948 bales, an increase of 12 per cent over the average of 41,796 bales during 1926. Activity was at a high rate throughout the year, the low point being reached in July, when 41,039 bales were delivered. Immediately thereafter an improvement was noted, deliveries reaching a maximum in September of 50,107 bales, a record for deliveries during any month in the history of the industry. Thereafter they declined gradually to 43,357 bales in December.

Table 34.—Approximate Deliveries of Raw Silk to Mills, and Machinery Activity

NOTE.—An asterisk (*) indicates the minimum and a dagger (†) the maximum month of each year.

Month	Approximate deliveries of raw silk to mills (bales)						Machinery activity—per cent of active hours [1]					
							Spinning spindles		Broad silk looms		Narrow silk looms	
	1922	1923	1924	1925	1926	1927	1926	1927	1926	1927	1926	1927
Monthly average	30,635	29,868	30,592	41,779	41,796	46,948	88.5	78.6	84.8	87.0	62.3	55.9
January	33,842	34,680	32,925	39,885	46,148	48,307	101.7	†89.4	†93.9	86.4	59.1	56.2
February	*22,107	36,231	29,804	*37,529	42,476	42,860	†103.4	89.1	92.6	86.2	59.2	58.1
March	26,651	33,515	26,543	45,157	39,400	49,242	101.1	81.2	92.0	90.1	62.5	60.4
April	24,247	†38,193	25,985	40,040	37,276	47,853	82.9	79.7	84.0	86.4	65.8	†62.6
May	33,284	24,509	28,272	38,266	*34,099	45,486	*75.0	76.5	80.2	87.3	65.0	61.6
June	29,529	27,824	*23,164	39,575	37,644	41,312	78.8	*67.3	*77.2	83.0	61.7	56.6
July	24,996	28,573	30,982	44,013	39,425	*41,039	81.7	74.9	78.7	89.7	59.5	53.8
August	34,772	33,547	29,888	44,047	45,943	47,042	82.0	73.4	78.9	86.8	61.8	51.9
September	34,212	26,929	†36,658	41,684	43,962	†50,107	87.5	77.1	80.8	*81.9	66.6	*50.8
October	†37,471	25,917	35,794	†46,815	†47,768	47,827	87.5	77.6	82.6	84.2	†69.3	54.2
November	35,467	25,225	33,125	41,848	47,634	46,947	89.7	77.8	89.2	88.4	63.6	53.3
December	31,042	*23,274	33,961	42,484	39,771	43,357	90.4	79.6	87.9	†93.0	*53.4	51.8

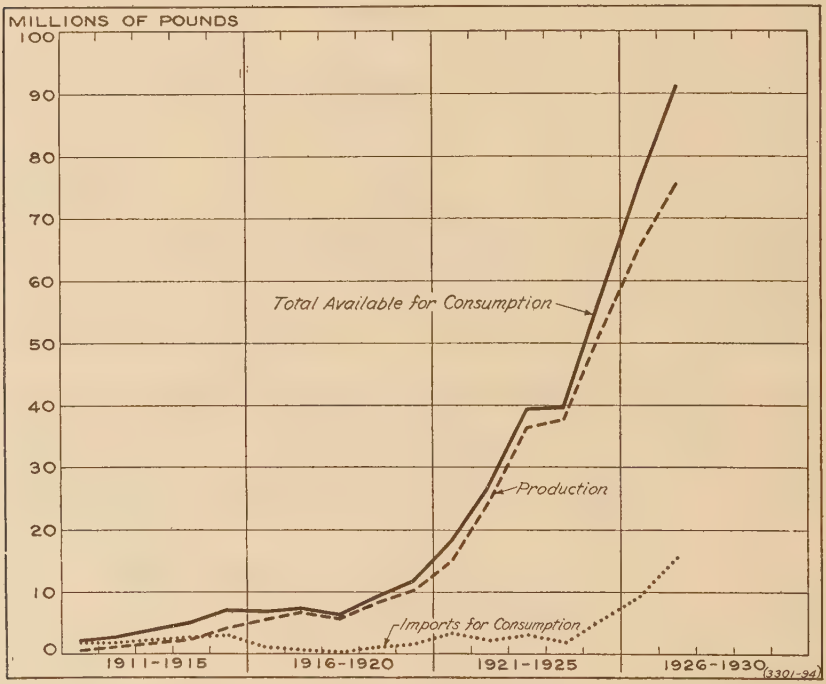
[1] Compiled by the Silk Association of America from manufacturers representing about 50 per cent of the industry. The figures represent the percentage of active hours to the total hours normally worked, and are weighted averages for each section of the silk industry.

Source: Statistical Bureau of the Silk Association of America.

The rayon industry, which has been expanding at a rapid rate during the past several years, experienced a very successful year in 1927. Domestic production of rayon yarns rose from 65,750,000 pounds in 1926 to 75,562,000 pounds in 1927, a gain of almost 15 per cent. Notwithstanding the increased American output of rayon, the imports for consumption mounted from 9,351,000 pounds during 1926 to 15,679,000 pounds in 1927, a gain of almost 68 per cent.

Chart VIII.—RAYON YARNS AVAILABLE FOR CONSUMPTION: DOMESTIC PRODUCTION AND IMPORTS FOR CONSUMPTION

NOTE.—No allowance is made for changes in stocks in calculating consumption. See note 1, Table 35.



The amount available for consumption increased from 75,101,000 pounds in 1926 to 91,241,000 pounds in 1927, a gain of 21 per cent. Taking into consideration the stocks of rayon yarns carried over from 1926, which were estimated to have amounted to approximately 10,000,000 pounds, the actual consumption in 1927 has been placed by the trade at more than 101,000,000 pounds, a gain of 55 per cent over 1926.

Price Movement.

The price of raw silk, Kansai No. 1, during 1927 averaged $5.10 a pound, a decline of 84 cents from the 1926 average, and was the lowest since 1916, when the average price was $4.87. The average price

increased from $5.34 a pound in January to $5.64 in February, the high for the year. After a decline to $5.39 in March there was an increase to $5.54 in April. A gradual decline then set in until the low of $4.51 was reached in November, with an improvement to $4.75 in December, a net loss of 59 cents as compared with the previous January.

Table 35.—Rayon Yarns Available for Consumption

[In thousands of pounds]

Calendar year	Approximate domestic production	Imports for consumption	Total available for consumption [1]	Calendar year	Approximate domestic production	Imports for consumption	Total available for consumption [1]
1911	320	1,800	2,120	1920	10,240	1,480	11,720
1912	1,120	1,513	2,633	1921	15,000	3,276	18,276
1913	1,566	2,306	3,872	1922	24,406	2,116	26,552
1914	2,445	2,527	4,972	1923	36,477	3,029	39,506
1915	4,111	3,000	7,111	1924	37,720	1,954	39,674
1916	5,744	965	6,709	1925	51,902	5,441	57,343
1917	6,697	533	7,230	1926	65,750	9,351	75,101
1918	5,828	121	5,949	1927	75,562	15,679	91,241
1919	8,174	1,072	9,246				

[1] No allowance is made for changes in the stocks. The stocks have usually been negligible, although it is estimated that they reached 10,000,000 pounds at the close of 1926.

Source: United States Tariff Commission for years 1913 to 1922, inclusive, and 1924; Bureau of Foreign and Domestic Commerce for subsequent years.

Rayon prices increased from $1.45 a pound for 150-denier A quality viscose yarns in January to $1.50 a pound in March. The prices were steady at this figure throughout the rest of the year. Price stability is believed to have been one of the contributing factors in the increased consumption of this fiber during 1927.

Table 36.—Raw Silk: Average Price per Pound at New York

Yearly average or year	Kansai, No. 1	China, Best No. 1	Month	Kansai, No. 1				China, Best No. 1			
				1924	1925	1926	1927	1924	1925	1926	1927
1891-1895	$4.01	-------	January	$7.35	$6.08	$6.71	$5.34	$8.43	$6.49	$7.09	$5.90
1896-1900	3.82	-------	February	6.86	6.22	6.66	5.64	8.08	6.58	7.07	5.91
1901-1905	3.82	-------	March	6.22	5.83	6.03	5.39	7.34	6.39	6.76	5.89
1906-1910	4.10	-------	April	5.64	5.98	5.49	5.54	6.56	6.31	6.30	6.17
1911-1915	3.51	-------	May	4.80	6.17	5.73	5.39	5.98	6.30	6.05	6.09
1916-1920	6.76	$7.96	June	5.00	6.37	5.88	5.19	5.65	6.44	6.25	5.78
1921-1925	6.75	7.41									
1913	3.64	4.46	July	5.39	6.32	5.78	4.95	5.81	6.56	6.24	5.42
1920	8.28	9.94	August	6.08	6.47	5.98	4.85	6.37	6.70	6.07	5.27
1921	6.04	6.51	September	5.44	6.62	6.13	4.85	6.53	7.00	6.17	5.27
1922	7.22	8.03	October	5.73	6.66	5.78	4.80	6.41	7.16	6.15	5.20
1923	8.23	9.18	November	6.17	6.57	5.49	4.51	6.45	7.13	6.07	4.99
1924	5.92	6.67	December	6.32	6.81	5.59	4.75	6.44	7.07	5.97	4.84
1925	6.34	6.68									
1926	5.94	6.35									
1927	5.10	5.56									

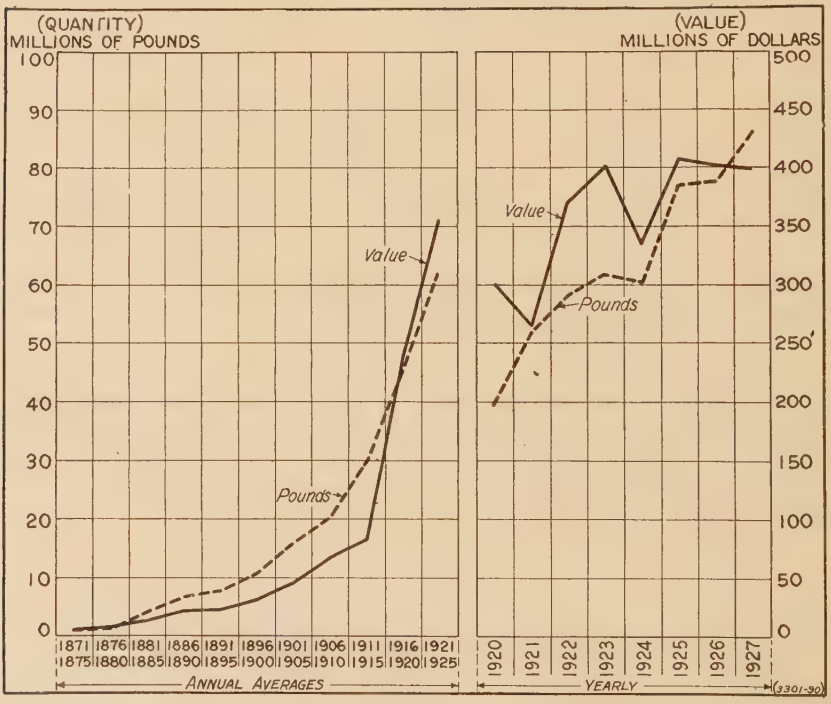
Source: Bureau of Labor Statistics, Department of Labor.

Foreign Trade.

Imports of raw silk in 1927 amounted to 74,005,000 pounds, establishing a new record for volume and representing an increase of 11 per cent over imports in 1926, which in turn were higher than in any previous year. The value of the 1927 raw silk imports was $390,365,000 and the average import price per pound was $5.27, as compared with $5.91 in 1926. Japan furnished 84 per cent of the imports, compared

Chart IX.—IMPORTS OF UNMANUFACTURED SILK

NOTE.—Figures for 1871–1880 represent raw silk only; quantity for other unmanufactured silk not having been reported.



with 81 per cent in 1926 and 78 per cent in 1925. The imports from China during the year were slightly greater than during 1925 and 1926. Imports of silk manufactures increased from $40,570,000 in 1926 to $42,158,000 during 1927, a 4 per cent gain. Exports of silk manufactures declined from $17,788,000 in 1926 to $15,298,000 in 1927, a 14 per cent loss.

The accompanying tables and charts show the imports of unmanufactured silk as well as the imports and exports of manufactured silk for considerable periods of years.

Chart X.—IMPORTS AND EXPORTS OF SILK MANUFACTURES

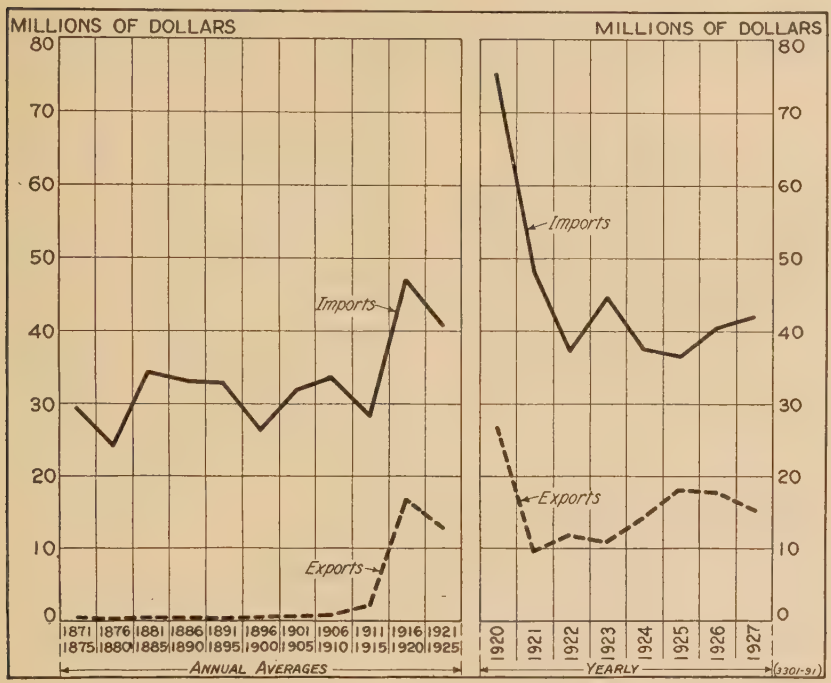


Chart XI.—IMPORTS OF RAW SILK BY COUNTRIES, AND TOTAL IMPORTS OF OTHER UNMANUFACTURED SILK

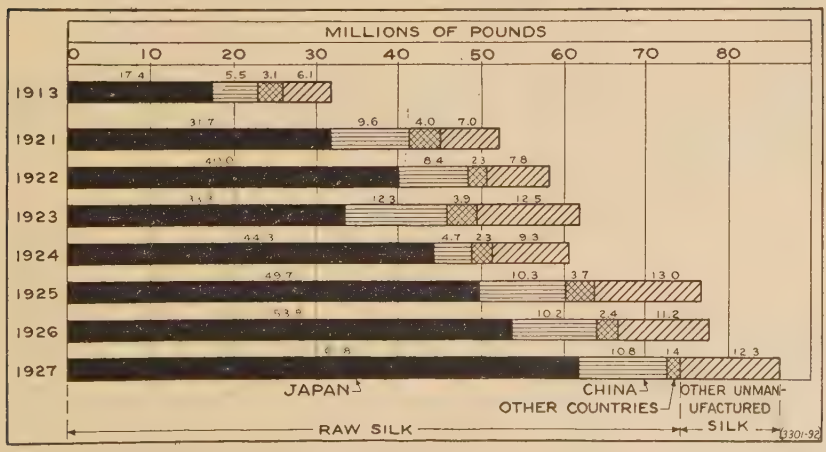


Table 37.—Imports of Unmanufactured Silk

Yearly average or year [1]	All unmanufactured silk		Year [1]	Unmanufactured silk					
	Quantity	Value		Total unmanufactured	Raw silk			Cocoons	Waste
					Total	Japan	China		
	1,000 pounds	*1,000 dollars*		*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
1871–1880 [2]	1,340	6,390	1910	23,457	20,363	11,958	4,084	49	3,045
1881–1890	5,328	16,775	1913	32,102	26,049	17,425	5,511	158	5,894
1891–1900	9,259	26,843	1914	34,546	28,595	20,196	5,927	1	5,950
1901–1905	15,798	45,968	1915	31,053	26,031	18,217	5,097	51	4,970
1906–1910	20,281	67,414	1916	40,872	32,455	24,375	6,367	69	8,349
1911–1915	30,190	82,703	1917	43,428	36,503	29,396	6,934	103	6,822
1916–1920	45,641	235,332	1918	48,721	32,865	27,075	5,751	220	15,635
1921–1925	62,030	356,287	1919	55,522	44,817	33,727	9,099	852	9,853
1920	39,660	301,038	1920	39,660	30,058	22,904	5,932	201	9,401
1921	52,332	264,723	1921	52,332	45,355	31,704	9,587	128	6,849
1922	58,467	371,629	1922	58,467	50,712	40,029	8,378	117	7,638
1923	61,954	401,655	1923	61,954	49,482	33,354	12,262	410	12,062
1924	60,603	335,041	1924	60,603	51,281	44,307	4,681	132	9,189
1925	76,795	408,386	1925	76,795	63,764	49,685	10,341	95	12,936
1926	77,666	402,676	1926	77,666	66,422	53,793	10,250	111	11,133
1927	86,344	399,088	1927	86,344	74,005	61,797	10,788	59	12,281

[1] Fiscal years to 1915, inclusive; calendar years thereafter.
[2] Figures represent raw silk only, quantity for other unmanufactured silk not having been reported.
Source: Bureau of Foreign and Domestic Commerce.

Table 38.—Imports and Exports of Manufactured Silk

[In thousands of dollars]

Yearly average [1]	All silk manufactures		Year	All silk manufactures		Silk fabrics [3]	
	Imports [2]	Exports		Imports	Exports	Imports	Exports
1871–1880	27,063	53	1920	75,419	26,821	35,551	8,775
1881–1890	34,162	83	1921	48,276	9,672	24,331	3,338
1891–1900	29,775	268	1922	37,413	11,824	17,923	3,870
1901–1905	32,215	425	1923	44,597	11,136	17,930	2,659
1906–1910	33,725	835	1924	37,699	14,148	13,462	2,711
1911–1915	28,306	2,210	1925	36,719	18,182	14,255	3,152
1916–1920	47,121	16,735	1926	40,570	17,788	18,627	3,870
1921–1925	40,941	12,992	1927	42,158	15,298	17,862	2,768

[1] Fiscal years, 1871 to 1915, inclusive; calendar years thereafter.
[2] Imports of rayon are included in the total of silk manufactures prior to 1911. Rayon was first shown separately in the imports entered for consumption in 1907. The values of rayon imports for consumption from 1907 to 1910, inclusive, were as follows: 1907, $908,099; 1908, $1,360,291; 1909, $1,427,909; 1910, $2,062,357.
[3] Broad silks only; classed as dress goods in exports prior to 1922. Pile fabrics are not included in the imports of silk fabrics for any year nor in exports after 1921.
Source: Bureau of Foreign and Domestic Commerce.

Table 39.—Imports and Exports of Manufactured Silk, by Classes

Class	Quantity (thousands of units)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Exports, total value					**14,148**	**18,182**	**17,788**	**15,298**
Broad silks, yards	2,359	2,533	3,201	2,289	2,711	3,152	3,870	2,768
Hosiery, dozen pairs	755	1,202	960	779	6,947	10,368	8,995	8,020
All other					4,490	4,662	4,923	4,510
Imports, total value					**37,699**	**36,719**	**40,570**	**42,158**
Spun silk or schappe silk yarn, pounds	1,198	1,382	582	873	3,963	5,130	1,824	2,103
Broad fabrics, do	2,377	2,745	3,739	3,526	13,462	14,255	18,627	17,862
Wearing apparel					7,779	6,980	8,334	8,479
Laces, embroideries					4,653	3,532	4,259	4,315
All other					7,842	6,821	7,525	9,399

Source: Bureau of Foreign and Domestic: Commerce.

MANUFACTURES OF MISCELLANEOUS FIBERS

SUMMARY.—Imports of jute increased 34 per cent in 1927, while the imports of manila fell off 26 per cent. The imports of sisal and henequen decreased slightly. Prices of Mexican sisal and manila declined during 1927, the former from 8 cents in January to 7.1 cents in December and the latter from 15.5 cents to 13 cents. Jute prices at both the beginning and close of the year were 7 cents.

PRODUCTION AND PRICE MOVEMENT

The branches of the textile industry using vegetable fibers other than cotton are chiefly dependent on foreign sources for raw materials, and the import statistics therefore are indicative of their activity. Manufacturers of these miscellaneous fibers are classified under three industries—cordage and twine, jute goods, and linen goods.

Cordage and Twine.

The figures of the 1927 census of manufactures are not yet available, but the 1925 census gives the output of cordage and twine plants as $100,448,000, compared with $88,283,000 in 1923, an increase of 14 per cent. These figures do not include the production of penal institutions. In addition to the output of establishments classified in the "cordage and twine industry," cotton rope, cordage, and twine are produced in considerable quantities as secondary products of cotton mills. Binder twine was the most important individual item, amounting to 235,605,000 pounds, worth $29,567,000. The 1925 output of rope, cable, and cordage (including secondary products of cotton mills) was valued at $47,976,000.

Table 40.—Cordage and Twine Industry

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899	105	13,114	33,657	$4,113,112	$26,632,006	$37,849,651	$11,217,645
1909	112	14,629	47,269	5,304,390	29,315,402	41,941,541	12,626,139
1914	105	15,769	55,272	6,995,596	43,605,473	59,761,486	16,156,013
1919	120	17,622	66,556	14,700,061	89,705,282	133,366,476	43,661,194
1921	118	14,593	[1]	12,923,694	46,480,950	75,355,705	28,874,755
1923	121	16,382	72,371	15,148,157	53,642,371	88,283,038	34,640,667
1925	118	15,400	77,563	14,018,511	66,847,504	100,447,564	33,600,060

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Jute and Linen Goods.

The establishments engaged primarily in the manufacture of jute, other than cordage and twine, increased the value of their output from $25,422,000 in 1923 to $27,517,000 in 1925. The production figures for 1927 are not yet available. In 1925 the manufacture of linen goods showed a total value of products of $11,157,000, a slight decline, compared with the value of $11,390,000 during 1923.

Table 41.—Principal Products of the Cordage and Twine, Jute Goods, and Linen Goods Industries and Similar Products of Cotton Mills [1]

[Quantities in thousands of pounds except linen woven goods and jute bagging, which are in thousands of square yards; values in thousands of dollars]

Articles	Quantity (thousands of units)				Value (thousands of dollars)			
	1914	1921	1923	1925	1914	1921	1923	1925
Total value					**86,918**	**106,030**	**136,047**	**150,000**
Rope, cable, and cordage:								
Manila hemp	104,909	71,842	92,266	101,006	12,860	13,243	14,926	21,791
Sisal	39,899	37,282	59,829	43,094	2,991	5,001	8,168	6,469
Henequen	13,534	4,254	6,259	5,223	1,042	530	836	778
Cotton	18,760	17,315	24,492	25,903	3,431	5,342	8,865	9,278
All other	26,815	8,554	34,764	58,033	2,097	1,694	5,646	9,661
Twine:								
Binder [2]	302,287	236,409	239,800	235,605	24,095	31,643	23,491	29,567
Cotton	31,212	93,832	38,881	49,941	6,264	21,617	17,054	19,734
All other	87,322		99,916	54,647	10,524		18,276	10,682
Yarns for sale (principally jute yarns) [3]	75,875	54,055	99,134	97,025	8,320	9,864	19,213	19,387
Linen thread	5,708	1,494	4,064	2,815	3,409	2,874	5,723	4,614
Linen woven goods	10,800	7,678	6,544	7,847	1,766	3,474	2,812	2,933
Jute bagging	131,828	54,505	35,252	40,871	6,441	4,515	2,610	4,482
All other products, including contract work					3,677	6,235	8,427	10,624

[1] In addition to the output of establishments classified in the cordage and twine, jute-goods, and linen-goods industries, and of cotton mills, as given in the body of this table, rope, cable, cordage, twine, etc., to the following values were reported as secondary products by establishments engaged primarily in other industries: For 1925, $77,922; for 1923, $1,111,959; for 1921, $931,786; for 1914, $1,797,210.

[2] Not including binder twine made in penal institutions, which in 1923 manufactured 55,570,000 pounds. No data were collected for 1925.

[3] In addition, yarns of miscellaneous textile vegetable fibers other than cotton are manufactured in large quantities by establishments classified in the cotton-goods, woolen-goods, worsted-goods, and silk industries.

Source: Bureau of the Census.

The prices of Mexican sisal declined gradually throughout the year from 8 cents a pound in January to 7.1 cents in December, the average price for the year being 7.6 cents. Manila fiber, fair, current shipment, declined from 15.5 cents per pound in January to 13 cents in December, the yearly average being 14.2 cents; fluctuations throughout the year were confined to rather narrow limits. Jute prices, which were steady for the first four months of the year, fluctuated between a low of 6.4 cents per pound for medium grade in May and June to a high of 8.3 cents in September, an average for the year of 7.1 cents.

FOREIGN TRADE

The imports of unmanufactured jute increased greatly during 1927 and amounted to 92,415 tons, as compared with 68,763 tons in 1926, a gain of 34 per cent. Imports of burlaps and jute bags or sacks declined. The importations of sisal and henequen were slightly less than they were a year earlier, while manila fiber imports dropped off 26 per cent, as compared with the previous year. The imports of woven fabrics of flax, hemp, and ramie increased slightly, while binding twine imports amounted to 15,805,000 pounds, a gain of 112 per cent over 1926.

The exports of binder twine declined from 36,500,000 pounds in 1926 to 19,295,000 pounds in 1927, a loss of 47 per cent, while the exports of other rope and cordage, except jute, fell off 13 per cent.

Table 42.—Imports and Exports of Vegetable Fibers and Manufactures Thereof, Except Cotton and Rayon

Principal classes	Quantity				Value (thousands of dollars)			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
IMPORTS								
Jute, unmanufactured....tons	93,163	64,551	68,763	92,415	7,217	12,309	14,788	12,154
Burlaps....1,000 pounds	421,383	625,816	598,977	569,649	29,421	85,028	82,238	67,249
Jute bags or sacks....do	(1)	48,070	47,395	38,793	3,346	5,946	5,972	3,963
Jute manufactures, other					648	5,208	10,340	6,721
Flax, unmanufactured....tons	10,752	5,254	6,822	4,496	3,361	3,576	3,261	2,154
Hemp, unmanufactured....do	6,639	3,197	2,300	1,697	1,225	1,467	860	525
Woven fabrics of flax, hemp, or ramie....1,000 pounds		23,255	24,084	24,174	19,166	26,472	22,923	23,109
Handkerchiefs....1,000 dozens		2,724	3,810	5,022	2,351	4,111	4,948	5,970
Laces, embroideries, etc					3,857	6,051	6,422	7,536
Other manufactures of flax, hemp, or ramie					6,450	10,944	14,243	15,773
Other vegetable fibers, raw:								
Manila....tons	71,922	62,633	69,270	51,405	9,910	18,195	18,282	13,138
Sisal and henequen....do	140,315	136,591	119,009	118,829	15,813	23,329	21,762	18,219
Kapok....do	(2) 2,210	9,620	7,945	9,221	(2) 571	4,903	4,863	4,496
Other....do	25,017	29,213	26,642	26,538	2,229	4,067	4,106	3,433
Binding twine....1,000 pounds	9,499	11,024	7,451	15,805	729	1,309	933	1,837
Hats, bonnets of straw, grass, etc.:								
Materials for....1,000 yards		996,802	1,417,171	1,256,067	5,507	3,798	4,885	5,234
Hats, bonnets, and hoods....thousands		24,354	29,571	32,499	4,181	7,904	10,271	9,055
EXPORTS								
Binder twine....1,000 pounds	94,403	54,247	36,500	19,295	7,027	7,107	4,712	2,254
Other rope and cordage, except jute....1,000 pounds		7,061	6,698	5,837		1,456	1,355	1,108
Jute manufactures					1,505	3,740	3,581	3,443

[1] Quantity in 1911-1914 averaged 50,217,000 pounds annually.
[2] Four-year average, 1911–1914.
Source: Bureau of Foreign and Domestic Commerce.

WEARING APPAREL

SUMMARY.—Manufacturers of wearing apparel were less conservative in production in 1927 than in 1926, because of freer buying on the part of dealers. Wholesale sales were larger than in 1926, but retail sales of men's clothing, men's furnishings, women's coats, women's suits, and millinery showed a slight decline. Imports of wearing apparel (other than knit goods) and allied lines were valued at $46,563,000 in 1927, while exports of similar commodities totaled $14,942,000.

Census Statistics of the Industry.

The census classification "textile wearing apparel" includes all classes of wearing apparel, not knitted, made from textile fibers. The manufacture of men's and women's outer garments—the two main branches of the industry—accounts for almost three-quarters of the total value, the remainder representing such specialized articles as hats and caps; suspenders, garters, and elastic webbing; men's

furnishing goods; corsets; millinery and lace goods; and other apparel. In the statistics of the clothing industry custom tailoring shops are not included.

Table 43.—Textile Wearing Apparel Industries

Industry and year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products [1]	Value added by manufacture
				Thousands of dollars			
Wearing apparel made from purchased textile fabrics, total:							
1914	14,953	510,595	117,911	250,114	673,013	1,297,273	624,260
1923	16,904	499,413	132,317	568,139	1,852,229	3,443,940	1,591,711
1925	14,862	465,583	119,158	533,924	1,739,376	3,239,978	1,500,602
Clothing, men's, not elsewhere specified: [2]							
1914	4,830	173,747	35,252	86,828	230,032	458,211	228,179
1923	4,607	194,820	52,642	235,487	584,804	1,178,715	593,911
1925	4,000	174,332	44,749	203,847	557,471	1,087,238	529,767
Clothing, men's—buttonholes:							
1914	139	672	205	326	90	638	548
1923	37	334	105	409	103	804	701
1925	30	327	87	347	71	658	587
Shirts:							
1914	792	51,972	17,117	19,170	50,665	95,815	45,150
1923	934	51,672	14,050	37,943	139,354	241,331	101,977
1925	840	49,864	13,884	35,674	129,754	225,963	96,209
Furnishing goods, men's, not elsewhere classified: [3]							
1914	551	22,459	5,840	8,416	31,593	52,453	20,860
1923	454	18,958	5,470	14,810	57,237	102,952	45,715
1925	419	21,094	4,977	17,438	69,861	120,868	51,006
Collars, men's:							
1914	35	10,100	3,359	4,494	6,566	18,531	11,965
1923	37	10,449	5,050	7,960	18,370	42,666	24,297
1925	28	7,187	4,497	5,503	11,792	27,588	15,795
Gloves and mittens, cloth, not made in textile mills: [3]							
1923	129	8,864	3,143	5,296	18,292	28,126	9,833
1925	118	7,798	3,516	4,810	15,735	25,660	9,925
Suspenders, garters, and elastic woven goods made from purchased webbing: [4]							
1923	100	3,458	809	2,892	13,934	24,297	10,363
1925	93	3,835	876	3,072	16,500	27,504	11,004
Hats and caps, cloth:							
1914	580	7,322	1,313	4,508	9,268	18,593	9,325
1923	651	7,313	1,782	9,594	22,250	42,811	20,561
1925	579	6,552	1,876	9,243	22,699	43,823	21,124
Clothing, women's, not elsewhere specified: [2]							
1914	5,564	168,907	27,874	92,574	252,345	473,888	221,543
1923	7,046	133,195	27,704	176,446	809,561	1,406,684	597,123
1925	6,127	126,466	24,316	175,045	724,299	1,293,705	569,406
Corsets:							
1914	167	20,496	6,962	7,977	19,587	40,551	20,964
1923	216	16,104	5,901	13,258	38,416	78,048	39,632
1925	185	14,525	8,394	12,394	37,808	77,115	39,307
Millinery and lace goods, not elsewhere classified: [5]							
1914	2,079	45,274	12,488	21,545	57,676	114,160	56,484
1923	2,693	54,246	15,661	64,044	149,908	297,505	147,598
1925	2,443	53,603	11,986	66,551	153,386	309,856	156,471

[1] The total for the group "Wearing apparel, made from purchased textile fabrics," includes receipts for contract work as follows: For 1925, $145,327,000; for 1923, $138,236,000; it also includes value of products other than wearing apparel for 1925, $12,013,000; for 1923, $5,308,000. Data for prior years incomplete.

[2] Custom-tailoring shops are not included, no matter how large.

[3] "Gloves and mittens, cloth," included with "Furnishing goods, men's," for 1914.

[4] Because of a change in classification, no comparable statistics can be given for 1914. Figures exclude elastic surgical goods.

[5] The production of untrimmed hats for women is covered, in part, by other industry classifications, namely, "hats, fur-felt," "hats, wool-felt," "hats, straw," and "hats and caps, cloth." Custom millinery shops are not included.

Source: Bureau of the Census.

Census statistics for 1927 are not yet available, but in 1925 the United States had 14,862 establishments employing 465,583 wage earners engaged in the manufacture of all classes of textile wearing apparel (other than knit goods, fur-felt, wool-felt, straw hats, and fur goods), compared with 16,904 establishments and 499,413 wage earners in 1923. These establishments reported a production valued at $3,239,978,000 (selling value at the factory) in 1925, against $3,443,940,000 in 1923, a decrease of 5.9 per cent. In both years the cost of the materials used in manufacture represented 54 per cent of the total value of the finished output.

The manufacture of men's and women's outer clothing, exclusive of custom-made clothing, accounted for $2,381,601,000, or 73.5 per cent of the total value of wearing apparel in 1925, compared with $2,586,203,000, or 75.1 per cent in 1923. The value of production in all branches of the wearing-apparel industry, except millinery and lace goods, men's furnishing goods, suspenders, garters, and elastic webbing, and hats other than straw, decreased in 1925, as compared with 1923.

In addition to the output of wearing apparel made from purchased fabrics, the fur-felt, wool-felt, and straw-hat industries produce goods which properly come under the head of wearing apparel and are included in the summary given in table 44.

Table 44.—Value of Products of the Textile Wearing-Apparel and Hat Industries [1]

[In thousands of dollars]

Industry	1914	1921	1923	1925	Per cent change, 1925 from 1923
Total	1,362,011	2,796,852	3,560,405	3,357,146	−3.9
Clothing, total [2]	932,737	1,958,165	2,586,203	2,381,601	−7.9
Women's, n. e. s. [3]	473,888	1,022,743	1,406,684	1,293,705	−8.0
Men's, n. e. s. [3]	458,211	934,776	1,178,715	1,087,238	−7.8
Men's, buttonholes	638	646	804	658	−18.2
Men's shirts	95,815	203,944	241,331	225,963	−6.4
Furnishing goods, men's	52,453	77,527	102,952	120,868	+17.4
Collars	18,531	29,571	42,666	27,588	−35.3
Suspenders, garters, and elastic woven goods	24,433	44,935	[3] 24,297	[3] 27,504	+13.2
Hats and caps, total	83,331	123,182	159,277	160,992	+1.1
Hats, fur-felt	37,350	52,614	75,253	80,066	+6.3
Hats, wool-felt	1,944	4,964	8,643	8,949	+3.5
Hats, straw	25,444	28,617	32,569	28,154	−13.6
Hats and caps, cloth	18,593	36,987	42,811	43,823	+2.4
Millinery and lace goods, n. e. s. [4]	114,160	268,714	297,505	309,856	+4.1
Corsets	40,551	75,600	78,048	77,115	−1.2
Cloth gloves and mittens [5]	(6)	15,213	28,126	25,660	−8.8

[1] Each establishment is classified according to its product of principal value.
[2] Not including custom-made clothing.
[3] Owing to changes in classification, figures for 1923 and 1925 are not comparable with those for preceding years.
[4] The production of untrimmed hats for women is covered, in part, by other industry classifications, namely, "hats, fur-felt" "hats, wool-felt," "hats, straw," and "hats and caps, cloth." Custom millinery shops are not included.
[5] Not including gloves made in textile mills. This item was under men's furnishings in 1914.
[6] Not available.

Source: Bureau of the Census.

Production for 1927.

The Bureau of the Census collects monthly statistics on garments cut for the following items: Men's and boys' suits, overcoats, and work clothing. Reports from 730 identical establishments manufacturing men's and boys' garments show that the total number of suits cut declined from 26,455,000 in 1926 to 24,295,000 in 1927. The number of overcoats cut also decreased from 5,914,000 in 1926 to 5,778,000 in 1927.

The data on the production of work clothing (overalls, unionalls, coveralls, two-piece suits, work pants, etc., exclusive of work shirts) collected from 158 identical establishments showed that the number of garments cut increased from 36,347,000 in 1926 to 41,156,000 in 1927. Net shipments of work clothing increased from a monthly average of about 2,686,000 in 1926 to 3,213,000 in 1927, while average stocks at the end of the month rose from 3,928,000 in 1926 to 4,479,000 in 1927. The foregoing figures, together with Table 45, which shows the number of garments cut by months for the years 1924, 1925, 1926, and 1927, afford the only statistical basis for comparison of production of men's clothing in 1926 and 1927.

Table 45.—Garments Cut: Men's and Boys' Suits and Overcoats; Also Work Clothing

NOTE.—Data for men's and boys' suits and overcoats compiled from reports of 730 identical establishments. The data on work clothing, compiled from reports of 158 identical establishments, represent outer work garments (overalls, unionalls, coveralls, two-piece suits, work pants, etc.) but do not include work shirts.

[In thousands of garments cut]

Month	Men's and boys' garments								Work clothing			
	Suits				Overcoats							
	1924	1925	1926	1927	1924	1925	1926	1927	1924	1925	1926	1927
Total	24,440	27,361	26,455	24,295	6,258	5,770	5,914	5,778	29,997	36,067	36,347	41,156
January	2,505	2,545	2,573	2,263	275	269	290	300	3,023	2,854	2,885	3,147
February	2,574	2,623	2,719	2,389	255	318	312	305	2,768	3,034	2,883	3,402
March	2,563	2,973	2,677	2,574	308	303	347	343	2,701	3,485	3,430	3,963
April	1,987	2,058	2,069	1,932	325	256	279	255	2,498	3,195	3,267	3,510
May	1,844	1,935	1,973	1,775	478	377	417	378	2,254	2,844	3,021	3,489
June	1,881	2,606	2,445	1,970	605	523	590	544	1,838	3,324	3,008	3,355
July	1,887	2,632	2,277	1,902	665	617	631	614	1,826	2,555	2,752	3,303
August	2,019	2,406	2,310	2,151	813	675	748	710	1,992	3,021	3,120	3,995
September	1,690	1,747	1,897	1,839	869	734	752	729	2,687	3,078	3,446	3,596
October	1,435	1,679	1,790	1,715	892	853	878	704	2,950	3,424	3,264	3,653
November	1,687	1,752	1,644	1,692	478	571	362	435	2,910	2,984	2,900	3,324
December	2,368	2,405	2,081	2,093	295	274	308	261	2,550	2,268	2,372	2,419

Source: Department of Commerce, Survey of Current Business.

Wholesale and Retail Sales for 1927.

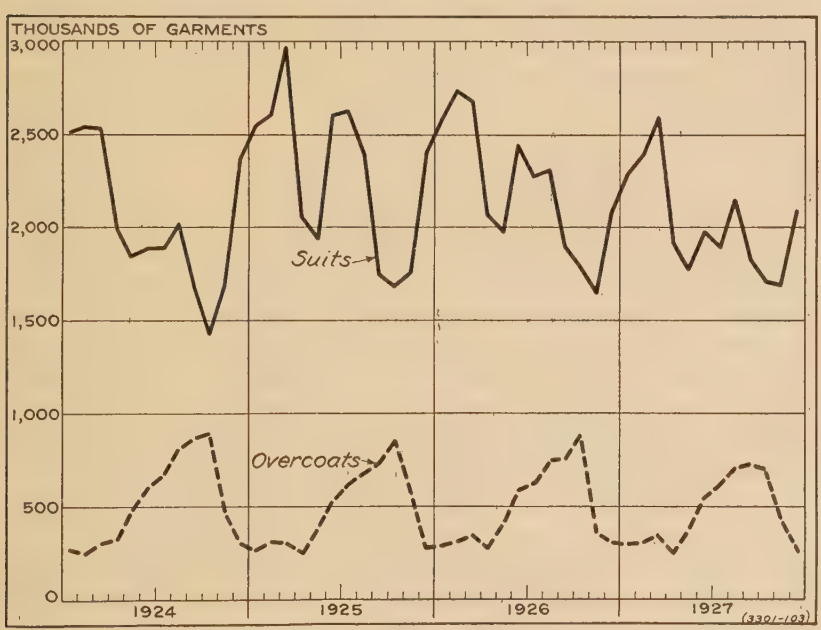
Wholesale sales of clothing in the New York Federal reserve district, which includes the two large clothing manufacturing centers of New York and Rochester, declined slightly in 1927, as compared

with 1926. Sales in March, July, and August exceeded those of the corresponding months of 1926. Wholesale sales during 1927 in the St. Louis Federal reserve district increased 17 per cent in value over those of 1926. (All comparisons are based on the monthly percentage of increase or decrease and not on total sales.)

Retail sales of wearing apparel in department stores during 1927 for the Federal reserve districts of Boston, New York, Philadelphia, Cleveland, Chicago, Dallas, and San Francisco, according to the Federal Reserve Board, showed an increase over 1926 of 1.9 per cent in boys' wear, 1.6 per cent in women's dresses, and 10 per cent in

Chart XII.—MEN'S AND BOYS' GARMENTS CUT

NOTE.—Figures represent data compiled from reports of 730 identical establishments.



misses' ready-to-wear. There was a decline of 1.2 per cent in sales of men's clothing, 0.3 per cent in men's furnishings, 2.7 per cent in women's coats, 0.9 per cent in women's suits, and 7 per cent in millinery.

Stocks on hand at the end of each month of 1927 in all the above-mentioned lines, except men's clothing, women's suits, and millinery, were higher than in 1926, indicating a tendency to more liberal buying.

Wages and Hours of Labor.

A study of wages, hours, and earnings in 1926 for the men's clothing industry in the United States has been made by the Department of

Labor. The information was obtained from pay rolls and other records of 198 establishments operating 359 shops. These figures cover 17,048 male and 16,611 female wage earners.

Average earnings per hour of males in all occupations in the industry increased from 93.1 cents per hour in 1924 to 93.7 cents per hour in 1926, while earnings of females increased from 54.4 cents in 1924 to 54.8 cents in 1926. Paradoxically, the average earnings for the industry as a whole, both sexes combined, decreased from 76 cents per hour in 1924 to 75 cents per hour in 1926. This decrease for the industry was owing to the larger percentage of females included in the 1926 study than in that of 1924.

The average full-time earnings per week of males in all occupations increased from $41.14 in 1924 to $41.51 in 1926, that of females increased from $23.94 to $24.28, while that of males and females combined decreased from $33.52 to $33.23. Average full-time hours per week for the industry increased from 44.1 in 1924 to 44.3 in 1926.

Foreign Trade.

Exports of wearing apparel and allied lines, other than knit goods, from the United States were valued at, $14,942,000 in 1927, a decrease of 8 per cent from 1926. (Table 46.) These shipments represent only one-half of 1 per cent of the output of the wearing apparel and hat industries of the United States. Increases were noted in exports of cotton and silk dresses, skirts and blouses, wool-felt hats, waterproof garments, and garters and arm bands.

Despite the relative unimportance of exports of wearing apparel, such products are widely distributed in world markets where quality and style are elements of consideration. Although exports of many kinds of finished apparel declined, these losses were partly offset by increases in exports of semimanufactured materials for use in wearing-apparel manufacturing establishments in foreign countries. A part of the decline can also be accounted for by the tendency to purchase cheaper items. Exporters of wearing apparel are continuing to place more emphasis on cooperation with foreign representatives and to take more care in the selection of a foreign agent or representative.

United States imports of wearing apparel and allied lines, other than knit goods, were valued at $46,563,000 in 1927, as compared with $46,645,000 in 1926. Hats, bonnets, and hoods of straw, grass, etc., and wool wearing apparel, other than knit, each accounted for about 19 per cent of the total imports in 1927. About $8,104,000 worth of silk wearing apparel was imported in 1927, as well as silk handkerchiefs valued at $1,570,000.

TABLE 46.—Exports and Imports of Wearing Apparel (Other Than Knit Goods) and Allied Lines of Textiles

[In thousands of dollars]

Class	1922	1923	1924	1925	1926	1927
Exports, total	**15,916**	**18,811**	**18,002**	**18,122**	**16,280**	**14,942**
Wearing apparel:						
Cotton, for men and boys—						
Shirts	1,684	2,962	2,819	2,497	2,340	1,988
Collars and cuffs	349	463	771	683	570	525
Underwear, not knit	568	865	824	973	842	691
All other	1,641	2,312	1,933	1,940	1,770	1,584
Cotton, for women and children—						
Dress, skirts, and waists	591	443	377	290	223	229
All other	898	788	735	788	375	259
Wool, for men and boys	1,160	1,519	1,656	1,210	639	558
Wool, for women and children	1,089	951	669	573	385	373
Silk blouses, dresses, and skirts	959	947	761	905	1,033	1,182
Silk wearing apparel, all other	723	725	888	914	677	528
Hats of straw, palm leaf, etc	750	608	614	476	352	276
Fur-felt hats, for men and boys	826	939	545	1,267	1,835	1,685
Fur-felt hats, for women and children			245	260	167	168
Wool-felt hats	431	429	350	286	184	224
Other hats and caps	994	1,213	1,105	1,228	977	866
Waterproofed outer garments	357	647	714	703	513	729
Garters and armbands	517	702	695	815	923	930
Suspenders and braces	204	268	157	155	114	102
Corsets, brassieres, and girdles [1]	1,924	1,746	1,903	1,967	2,180	1,902
Handkerchiefs, cotton	251	285	240	190	179	143
Imports, total	**25,263**	**27,872**	**32,780**	**37,869**	**46,645**	**46,563**
Wearing apparel:						
Cotton	5,370	[2] 6,537	6,668	5,744	6,877	5,134
Linen	244	252	544	371	264	327
Wool	[3] 4,150	4,397	5,040	7,777	10,416	[4] 8,848
Silk	[3] 5,380	5,584	7,518	6,713	8,089	8,104
Handkerchiefs and mufflers, cotton	1,631	1,508	2,329	2,582	2,156	1,983
Handkerchiefs, linen	2,880	3,607	4,838	4,111	4,948	5,970
Handkerchiefs and mufflers, silk	741	896	746	1,262	1,390	1,570
Hats, bonnets, and hoods of straw, grass, etc	4,365	4,503	4,504	7,904	10,271	9,055
Hats and hat bodies of wool felt	[5]	[5]	[5]	[5]	[5]	3,122
Fur-felt hats	504	587	593	1,406	2,232	2,451

[1] Prior to Jan. 1, 1927, this item comprised only cotton corsets and brassieres. Since Jan. 1, 1927, it includes corsets, brassieres, and girdles of every description.

[2] Figures not comparable with those for other years, owing to omission in 1923 of certain embroidered garments from the Philippines.

[3] Figures for silk and wool wearing apparel in 1922 are imports for consumption.

[4] Beginning with Jan. 1, 1927, "hats and hat bodies of wool felt" were shown separately. Prior to that date this item was included in wool wearing apparel.

[5] Included in "wool wearing apparel" prior to Jan. 1, 1927.

Source: Bureau of Foreign and Domestic Commerce.

FURS AND MANUFACTURES[1]

SUMMARY.—The fur-manufacturing industry has shown a very rapid growth during recent years. According to the latest available census returns, the value of furs manufactured was almost six times as large as before the war. Imports of furs and fur goods have shown a very great expansion and in 1927 reached more than three times as large a value as in 1921. Fur exports have also shown a large growth and in 1927 reached a value one-third greater than in 1926.

Production of Raw Furs.

Although there are no figures available on the fur catch of the United States, its value is variously estimated at from $45,000,000 to $70,000,000. Many of the States require trappers to file returns showing the number of pelts taken during the year and the prices

[1] This is the first issue of the Commerce Yearbook to cover this subject.

received for each kind. The National Association of the Fur Industry and the Federal departments are encouraging the collection of these data, and more and more States are making trappers' reports a requirement which must be complied with before the issuance of the permit for the following season.

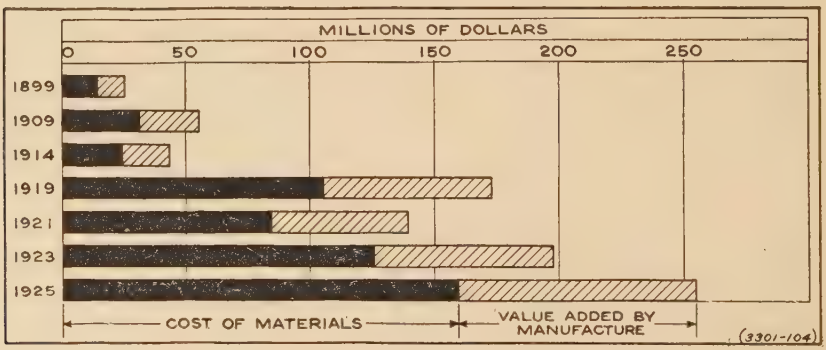
There has been, during recent years, a marked development in fur farming. Fox farming is well established throughout the northern part of the United States, and practically all of the silver and black fox pelts used by the American furriers are raised on farms. Muskrat farming, which is really regulated trapping on privately owned or leased marshes, is very widely practiced. Mink, marten, and rabbits are also being raised domestically.

Fur-Dressing and Fur-Manufacturing Industries.

Census statistics for 1927 on the fur-dressing and fur-goods industries are not yet available, but in 1925 the fur-dressing industry

Chart XIII.—VALUE OF PRODUCTS IN THE FUR-GOODS INDUSTRY

NOTE.—The sum of cost of materials and value added by manufacture represents the selling value of products at the factory.



comprised 133 establishments whose total production was valued at $25,423,000, of which the cost of materials accounted for $7,296,000 and the balance of $18,126,000 represented the value added by manufacture. This industry includes establishments engaged primarily in the scraping, currying and tanning, and bleaching and dyeing of pelts for use in the manufacture of fur goods, and the dressing of hair and bristles. In many cases this work is done for others on a contract basis. Interrupted communications and trade during the war gave American fur dressers an opportunity for expansion and resulted in enlargement of existing plants and the formation of new concerns. The total value of the products of the fur-dressing industry rose from $2,875,000 in 1914 to $20,385,000 in 1919, a gain of 609 per cent. Since 1919 there has been a further increase in the value of the ouput to $25,423,000 in 1925, as indicated in Table 47.

The fur-goods industry classification covers establishments engaged in the manufacture of fur goods for the wholesale trade and does not include wholesale and retail dealers who incidentally do a small amount of manufacturing. The principal products of the industry are fur sets and furs (including boas, capes, collars and collarettes, muffs, scarfs, shawls, and stoles); fur coats and cloaks; fur and fur-lined overcoats; other fur garments; fur hats, caps, gloves, and mittens; and fur robes. In 1925 establishments engaged primarily in the manufacture of fur goods numbered 2,000 and reported products to the value of $254,266,000, an increase of 28 per cent, compared with $198,043,000 for 1923, the last preceding census year. With the exception of the census year 1921, when value of production fell below that of 1919, census statistics show that the industry experienced a steady growth since 1899, when the total output was valued at $25,899,000.

Table 47.—The Dressed-Fur and Fur-Goods Industries

Industry and year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
Dressed furs:							
1899	92	835	1,063	$478,190	$519,699	$1,440,455	$880,756
1909	93	1,241	2,103	806,468	810,800	2,390,959	1,580,159
1914	96	1,525	2,207	922,966	906,036	2,875,036	1,969,000
1919	141	5,075	5,421	7,098,286	6,338,835	20,384,569	14,045,734
1921	126	4,429	(1)	6,758,712	6,070,474	19,157,339	13,086,865
1923	162	5,203	7,776	8,381,453	7,241,783	25,466,841	18,225,058
1925	133	5,056	9,858	8,205,892	7,296,408	25,422,663	18,126,255
Fur goods:							
1899	734	7,758	907	3,927,214	14,281,092	25,899,192	11,618,100
1909	1,241	11,927	2,120	7,787,845	31,776,905	55,937,549	24,160,644
1914	1,322	9,030	3,225	6,334,661	23,847,402	43,632,693	19,785,291
1919	1,815	13,639	5,327	24,149,212	105,596,605	173,137,739	67,541,134
1921	1,707	12,052	(1)	22,421,193	84,536,855	139,365,929	54,829,074
1923	1,758	14,439	4,299	27,923,042	126,162,143	198,042,571	71,880,428
1925	2,000	16,556	4,985	35,164,292	159,315,693	254,265,708	94,950,015

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Foreign Trade.

Although the United States is the largest producer of raw furs in the world, the American fur-manufacturing industry has grown to such an enormous extent that the importations of furs and manufactures, more than 90 per cent of which represent raw furs, ranked sixth among the commodities imported into the United States in 1927. The total value of fur imports amounted to $135,574,000 in 1927, which was 15 per cent more than in 1926 and over three times as large as in 1921. Imports of raw furs totaled $123,630,000. Among the semimanufactures, dressed furs amounted to $3,352,000, plates and mats of dog and goat skins to $5,878,000, and cut fur for hatters' use to $442,000.

During 1927 China was the largest supplier of furs, with a valuation of $27,455,000, followed by the United Kingdom with $22,196,000 and Canada with $15,066,000. Germany was fourth, supplying $14,338,000 worth, and Australia fifth, with shipments valued at $10,972,000.

Prior to 1928 a large proportion of the raw furs were shown as "Other furs, undressed," on the import schedules of the United States. After a study of this subject the Bureau of Foreign and Domestic Commerce rearranged the schedules, and the statistics beginning with January, 1928, specify separately more than 90 per cent of the furs imported.

The exports of furs and manufactures in 1927 were valued at $30,893,000, the highest year on record, with the exception of 1920. Shipments to the United Kingdom totaled $12,299,000; exports to Canada, $7,541,000; and exports to Germany, $7,029,000.

Table 48.—Imports and Exports of Furs and Fur Manufactures [1]

[In thousands of dollars]

Yearly average [2]	Imports	Exports	Year	Imports	Exports
1871-1880	4,192	3,743	1920	92,399	32,887
1881-1890	7,223	4,489	1921	40,058	14,861
1891-1900	9,466	3,635	1922	68,110	22,342
1901-1905	15,003	5,528	1923	87,975	22,619
1906-1910	21,468	9,313	1924	87,706	26,130
1911-1915	19,222	12,520	1925	115,349	26,583
1916-1920	50,594	19,214	1926	117,418	23,216
1921-1925	79,839	22,507	1927	135,574	30,893

[1] Fur-felt hats included prior to 1911. [2] Fiscal years, 1871 to 1915.

Source: Bureau of Foreign and Domestic Commerce.

Improved Trade Practices.

There had been considerable confusion in the fur trade regarding the correct names for fur merchandise, owing to the fact that the names used were familiar to those in the trade but were not familiar to the purchasers of the goods at retail. Representatives of the fur trade and associations met with the Federal Trade Commission and decided that the true name of the pelt should be in the trade name, so that there could be no misunderstanding. In the case of a coat of muskrat dyed to resemble seal the name is now "seal-dyed muskrat" instead of "Hudson seal." This agreement has done much to engender confidence in fur advertising.

LEATHER AND LEATHER PRODUCTS

LEATHER

SUMMARY.—Curtailment of leather stocks, so much in evidence in 1926, continued in 1927. By autumn stocks throughout the world were at a minimum. Per capita consumption of leather in South America and the Far East is on the increase and the demand for leather is stimulated by the increase in populations of Europe and North America. The decline in number of cattle in the United States, decreased slaughter, and a lower per capita meat consumption made it necessary for us to buy a larger quantity of raw leather in the world market. Prices for domestic hides and skins started to rise in April and continued to advance, except for a slight decline in August, until the end of the year. The world market levels followed the domestic market closely. In some instances raw stock almost doubled in price. Quotations for various types of leather advanced from 25 to 50 per cent and tanners had the best year since the war. At the close of the year, however, the leather industry was faced with serious problems in the buying resistance of shoe retailers, the encouragement which the high price of leather had given to the use of substitutes, and the difficulty in securing prices for leather that would cover replacement cost.

POSITION OF THE INDUSTRY

The tanning industry is divided into four main groups, producing the following types of leather: (1) Sole, belting, side upper, patent, harness, bag, and upholstery leather (utilizing cattle hides); (2) calf and kip upper leather; (3) goat and kid upper and fancy leather; (4) sheep and lamb upper, lining, glove, and fancy leather.

Table 1.—Leather and Leather Manufactures

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products [1]	Value added by manufacture
				In thousands of dollars			
1914	6,758	307,060	311,194	169,358	753,135	1,104,595	351,460
1919	6,397	349,362	382,537	363,453	1,713,806	2,610,231	896,425
1921	4,813	280,071	(2)	314,412	934,398	1,544,186	609,788
1923	4,868	344,545	412,998	388,630	1,083,345	1,880,085	796,740
1925	4,264	315,288	413,759	356,246	1,015,123	1,767,581	752,458

[1] This value includes much duplication. [2] Not called for in schedule for 1921.

Source: Bureau of the Census.

According to census figures, manufacturers of leather and leather products in 1925 produced goods valued at $1,768,000,000 (a figure which involves considerable duplication). The output of the tanning industry itself was valued at $462,000,000, a decline of 5.8 per cent from 1923.

Table 2.—Tanning Industry of the United States

Year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				In thousands of dollars			
1899	1,306	52,109	88,192	22,591	155,000	204,038	49,038
1909	919	62,202	146,725	32,103	248,279	327,874	79,595
1914	741	55,936	171,734	31,914	284,245	367,202	82,956
1919	680	72,476	217,761	88,205	646,522	928,592	282,070
1921	608	48,955	(1)	57,741	277,725	383,365	105,640
1923	597	59,703	230,187	73,784	321,750	488,898	167,148
1925	532	53,043	222,678	66,762	306,634	462,014	155,380

[1] Not called for in schedule for 1921.
Source: Bureau of the Census.

The United States easily ranks first among countries in the tanning of leather. Our production is estimated to be equal to that of all the rest of the world combined. In spite of the large domestic supply of cattle hides, calfskins, and sheepskins, our tanning industry imports a large volume of raw stock, including practically the entire amount of goat and kid skins tanned.

PRODUCTION

Number of Hides and Skins Used.

There were 132,217,000 hides and skins tanned in 1927, an increase of approximately 4.7 per cent, as compared with 1926.[1] Of the total amount of raw stock used 77 per cent of the pieces went into shoe leathers; 5 per cent into fancy, bookbinding, and kindred leathers; 10 per cent into glove leather; 3 per cent into belting, bag, harness, and upholstery leathers; and the remaining 5 per cent into miscellaneous leathers. The number of hides and skins represented in the production of leather in 1926 and 1927, respectively, was as follows: Cattle hides, 21,496,000 and 21,820,000; calf and kip skins, 15,744,000 and 16,987,000; goat and kid skins, 49,776,000 and 50,736,000; sheep and lamb skins (exclusive of chamois and other fleshers), 31,665,000 and 36,062,000; other hides and skins, 7,556,000 and 6,614,000.

Quantity of Leather Produced.

According to the census, 15,829,000 backs, bends, and sides of sole leather were produced in 1927, an increase of 16 per cent as compared with 1926, and a decline of 12 per cent as compared with 1914. Hides entering into the production of rough belting butts numbered 929,000, an increase of 8 per cent as compared with 1926. The figure for belting-leather production in 1927 in Table 3 includes the total of rough butts produced and the production of curried belting butts, involving considerable duplication.

[1] The revised figure for consumption in 1926 is 126,238,000 hides and skins.

Table 3.—Leather Production, by Principal Classes

[All figures in thousands of units specified]

Class	1914	1921	1922	1923	1924	1925	1926	1927
Sole leather (cattle) ---------sides--	18,098	18,063	17,735	18,732	14,640	14,879	13,615	15,829
Belting leather---------butts--	974	1,195	1,014	1,471	1,231	1,572	1,852	1,891
Side, upper and patent (cattle)-sides--	10,049	14,874	22,904	24,226	23,183	23,966	22,936	21,848
Harness leather---------do----	2,944	811	1,377	1,555	1,269	1,288	1,169	1,016
Bag, case, and strap---------do----	1,005	821	1,249	1,200	1,056	1,175	1,183	1,105
Upholstery [1]---------hides--	654	414	716	743	649	626	601	502
Calf and kip---------skins--	16,587	14,988	15,686	18,474	16,455	13,878	15,744	16,987
Goat and kid---------do----	34,627	35,058	48,905	47,354	35,895	42,485	49,776	50,736
Sheep and lamb---------do----	[2] 27,952	24,655	36,573	43,795	38,781	33,089	31,665	36,062

[1] Includes "whole-hide grains" and "machine buffed" only. For 1914 "whole-hide grains" only.
[2] Figures are not strictly comparable with later years, owing to the omission of certain classes in 1914 which were not called for on the schedule.

Source: Bureau of the Census.

The production of cattle side upper leather, including patent, showed a decline of about 5 per cent as compared with 1926 and an increase of 117 per cent over 1914. Of this total, patent leather amounted to 8,388,000 sides—slightly in excess of the revised figure for 1926, which amounted to 7,459,000 sides.

The production of harness leather was 13 per cent less than in 1926, while the output of bag, case, and strap leather declined 7 per cent. Production of upholstery leather, which amounted to 502,000 hides, showed a decline of 16 per cent.

Production of calf and kip leather in 1927 showed an increase of 8 per cent as compared with 1926, and the output of goat and kid leather increased by about 2 per cent. Ninety-six per cent of calf and kip leather and 98 per cent of the goat and kid leather went into shoe upper leathers, the remainder into fancy and glove leathers.

The production of sheep and lamb leather amounted to 36,062,000 skins, an increase of 14 per cent as compared with 1926. Of this total, shoe leathers represented 41 per cent; glove leather, 21 per cent; hat sweats, 9 per cent; and the rest was shearlings, roller leather, etc.

Table 4.—Production of Shoe Leather, by Months [1]

[All figures in thousands; unit for sole leather (cattle) is back, bend, or side; for side upper leather, the side; and for others, the skin]

Month	Sole leather (cattle)		Side upper leather		Calf and whole kip		Goat and kid		Sheep and lamb	
	1926	1927	1926	1927	1926	1927	1926	1927	1926	1927
Total	**13,615**	**15,829**	**15,476**	**13,459**	**14,943**	**16,150**	**48,415**	**49,417**	**13,973**	**14,849**
January	1,057	1,170	1,255	1,323	1,281	1,307	4,072	4,386	970	1,204
February	998	1,221	1,223	1,250	1,168	1,220	4,135	4,160	913	1,236
March	1,113	1,411	1,219	1,224	1,312	1,189	4,770	4,206	1,289	1,378
April	1,106	1,397	1,141	1,030	1,276	1,065	4,332	3,763	1,159	1,160
May	1,059	1,378	1,064	1,010	1,126	1,159	4,133	3,759	985	1,141
June	1,180	1,352	1,213	1,199	1,174	1,164	3,804	4,174	1,061	1,296
July	1,115	1,356	1,300	1,008	1,261	1,372	3,512	3,202	1,159	1,297
August	1,183	1,393	1,334	1,192	1,234	1,582	3,773	4,337	1,292	1,265
September	1,152	1,337	1,428	1,156	1,235	1,492	3,696	4,223	1,384	1,231
October	1,226	1,325	1,523	1,081	1,291	1,588	3,782	4,360	1,329	1,237
November	1,170	1,246	1,380	946	1,233	1,491	3,842	4,124	1,187	1,215
December	1,256	1,243	1,396	1,040	1,352	1,520	4,564	4,723	1,245	1,191

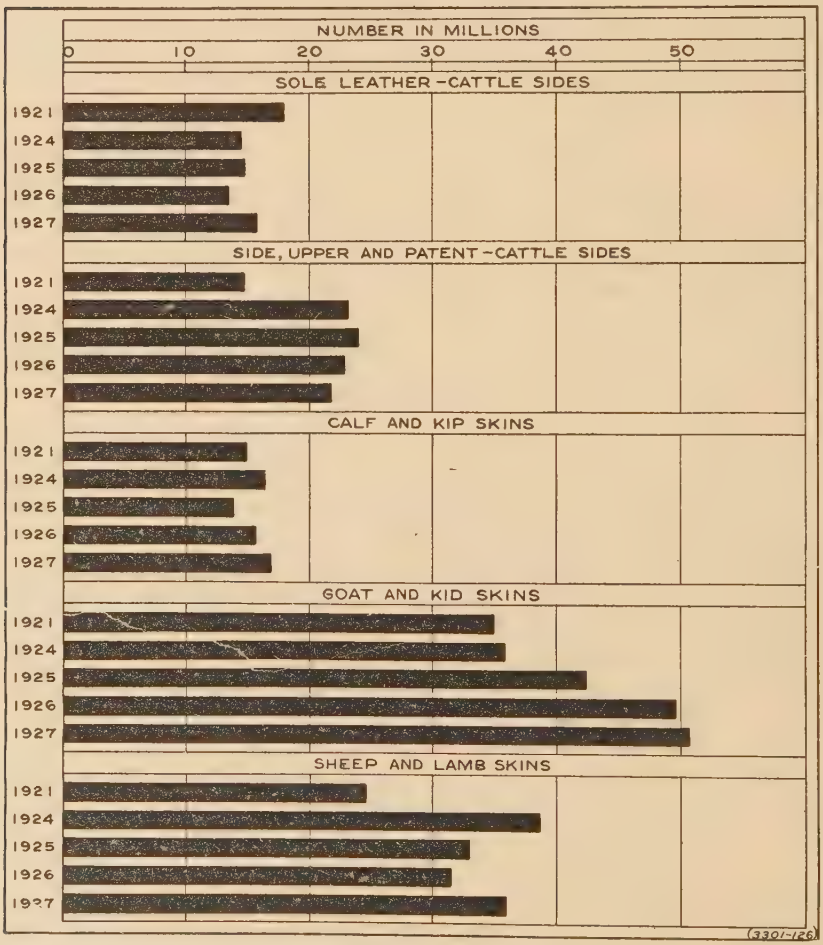
[1] Figures for patent leather not included.

Source: Bureau of the Census.

Monthly Production of Shoe Leather.

Table 4 shows the production of the five leading types of shoe leather, by months, for the years 1926 and 1927. The monthly trends for all these types were considerably different in 1927 from those in 1926; production of sole leather, side upper leather, and sheep and lamb leather each reached a peak in the first quarter of 1927, whereas

Chart I.—PRODUCTION OF PRINCIPAL CLASSES OF LEATHER



the maximum output of calf and kip leather was in October and the largest production of goat and kid leather was in December.

PRICE MOVEMENT AND MARKET CONDITIONS

Hides and Skins.

Prices for most classes of raw stock advanced slightly in January, 1927, over the December, 1926, closing price. For domestic classes of hides and skins this advance amounted to one-half cent. In

February the usual seasonal decline set in for the poor-quality winter take-off. In April prices for domestic raw stock started to rise. Russia continued to buy actively in the River Plate countries, Brazil, and Australia. American tanners bought more heavily in the world market because of the short supply at home and the increased demand for leather. German tanners likewise purchased heavily on the world market, largely because of increased export demand for German leather. As a result of this international competition for raw stock, prices rose steadily until August, when there was a recession on some classes of 1 to 2 cents a pound. By the end of August the advance was renewed and prices of all lines of raw stock, except goatskins and certain classes of sheepskins, rose steadily to the close of the year. European and River Plate markets for raw stock followed closely the trend of our domestic market throughout the year. Our exports of domestic hides and skins for 1927 amounted to 63,992,506 pounds, a decline of 15 per cent as compared with 1926. The average market prices of typical hides and skins are given in Table 5.

Table 5.—Wholesale Prices of Hides and Skins

[Prices per pound except for goat and sheep skins]

Period	Packer heavy native steer, Chicago	Packer heavy Texas steer, Chicago	Packer light native cow, Chicago	No. 1 heavy country cow, Chicago	No. 1 Chicago city calfskin	Packer Colorado steer, Chicago
1902-1906	$0.132	$0.137	$0.116	$0.103	$0.139	----------
1907-1911	.145	.145	.128	.110	.162	----------
1012-1916	.209	.198	.200	.169	.213	----------
1917-1921	.294	.270	.264	.198	.423	----------
1922-1926	.157	.147	.115	.104	.190	$0.178
1920	.316	.275	.292	.192	.409	----------
1921	.135	.133	.111	.077	.185	----------
1922	.178	.167	.152	.111	.189	.155
1923	.167	.148	.137	.105	.171	.140
1924	.144	.136	.114	.093	.200	.127
1925	.160	.150	.146	.118	.217	.140
1926	.140	.135	.130	.095	.175	.127
1927	.193	.182	.194	.150	.207	.176
1925:						
January-March	.158	.152	.143	.120	.237	.143
April-June	.143	.140	.137	.113	.205	.131
July-September	.173	.156	.158	.124	.217	.143
October-December	.162	.152	.143	.115	.206	.145
1926:						
January-March	.135	.132	.123	.102	.193	.125
April-June	.125	.122	.122	.095	.170	.118
July-September	.145	.143	.138	.093	.178	.128
October-December	.155	.145	.138	.102	.173	.140
1927:						
January	.155	.145	.140	.105	.175	.140
February	.145	.140	.135	.110	.175	.135
March	.140	.135	.130	.105	.165	.130
April	.150	.145	.150	.120	.165	.140
May	.160	.155	.160	.130	.185	.150
June	.195	.180	.200	.165	.230	.170
July	.230	.205	.230	.165	.240	.200
August	.215	.195	.220	.175	.220	.190
September	.220	.210	.220	.185	.210	.205
October	.230	.215	.215	.180	.225	.210
November	.240	.225	.215	.175	.240	.220
December	.245	.235	.220	.195	.255	.230

Table 5.—Wholesale Prices of Hides and Skins—Continued

[Prices per pound except for goat and sheep skins]

Period	Buenos Aires frigorificos	Bogata dry hides	Goatskins (per skin)		New Zealand pickled super sheepskins per dozen
			Patnas	Hankows	
1902–1906		$0.210			
1907–1911		.208	$0.390	$0.367	
1912–1916	$0.202	.299	.434	.434	
1917–1921	.315	.357	[1] 1.145	[2] .995	
1922–1926	.167	.211	.667	.581	$15.70
1920	.316	.330	1.565	1.216	
1921	.145	.135	.641	.509	
1922	.189	.185	.688	.541	16.50
1923	.170	.195	.727	.623	21.50
1924	.145	.195	.613	.525	16.40
1925	.175	.250	.661	.574	14.10
1926	.160	.230	.750	.655	9.95
1927	.202	.269	.747	.647	13.60
1925:					
January–March	.200	.246	.657	.586	21.50
April–June	.160	.243	.601	.533	21.15
July–September	.165	.253	.649	.581	20.85
October–December	.170	.260	.733	.615	22.50
1926:					
January–March	.173	.245	.794	.633	18.83
April–June	.155	.225	.710	.643	17.50
July–September	.152	.225	.757	.670	15.50
October–December	.168	.232	.757	.677	14.42
1927:					
January	.180	.240	.790	.670	14.00
February	.180	.250	.790	.690	14.00
March	.180	.240	.790	.650	14.00
April	.180	.240	.725	.620	14.00
May	.170	.250	.720	.615	13.25
June	.190	.265	.725	.550	13.50
July	.215	.270	.705	.645	13.75
August	.190	.280	.685	.645	13.50
September	.200	.270	.705	.650	13.50
October	.220	.290	.790	.680	13.50
November	.250	.310	.780	.680	13.50
December	.260	.350	.760	.680	13.50

[1] Maximum price per skin fixed by the Government during 1918 at $0.91⅔.
[2] Government fixed maximum prices on these skins at $14.50 per dozen from May to December, inclusive, in 1918; the average for that year is based on the quotations during January to April, inclusive.

Source: Pratt Bros., New York.

Leather.

All classes of shoe leathers, with the exception of cattle side upper, showed increased sales in 1927 as compared with 1926. Consumption of sole leather increased 8 per cent; of patent side upper, 14 per cent; and of calf and kip upper, 14 per cent. Sales of goat and kid upper leather increased 5 per cent and of sheep and lamb upper leather 7 per cent. Sales of cattle side upper, black and colors, declined 11 per cent. The sizable increase in shoe production as compared with 1926 was responsible for the increased sales of shoe leathers. Both in Europe and in the United States the predominant call was for black rather than for colors. The unseasonable spring and summer weather in Europe was the dominating factor in this trend. A varying and increased demand for colored uppers had been generally expected, but the extensive program for light shades had to be pretty much discarded at the beginning of the season. A

revival of demand for colors later in the season did not long survive. Patent leather was the big feature of the year. The demand for elk for work shoes showed a notable increase and kid and calf both made gains. Sole leather had the largest price advance of the shoe leathers and the new price level was firmly maintained.

As was to be expected with a rapidly rising raw-stock market, leather prices generally advanced, but, as usual, tardily. Demand for all types of leather during the first eight months was disappointing, but during the last four months of the year became more active than at any time since 1920.

Heavily scoured oak backs, tannery run, were quoted on January 1 at 45 cents per pound, the lowest point of the year. On December 31 they sold at 62 cents per pound, the highest point of the year. Heavy union steer backs, tannery run, followed a similar course and rose from 43 cents per pound on January 1 to 60 cents per pound on December 31. Light union cow backs, which sold on January 1 at 43 cents per pound, rose to 60 cents per pound on December 31.

In common with other lines of upper leather, goat and kid upper advanced during the year. One tannage of black kid, medium weight third grade, with 3-foot run, sold at 70 cents a square foot on January 1, the low of the year, and on December 31 at 75 cents a square foot. Four-foot skins of the same grade and weight were advanced to 70 cents a square foot, 5-foot skins to 67 cents a square foot, and 7-foot skins to 62 cents a square foot. These advances were made in June, 1927, and held good for the rest of the year. There was an absence of demand for the heavier weights, so that advances were not made in some grades, while the advance on others was only about 2 cents a square foot. A selection of B-grade patent side upper leather which was sold on January 1 at 35 cents a square foot, the low of the year, was raised in July to 43 cents, and this figure was maintained for the rest of the year. Prices for black and colored sheepskin linings in January ranged from 10 to 16 cents a square foot, according to quality. Black sheepskin linings closed the year at practically the same figures, except that fourth grade was advanced to 10½ cents. Colored sheepskin linings were advanced to 13, 16, and 17 cents, according to grade, in July, and these prices were maintained for the rest of the year.

Stocks.

In spite of the great reduction in stocks of nearly all types of leather in 1926, further liquidation occurred in 1927. At the close of the year stocks of leather generally in this country were sufficient to supply the shoe industry for only about six weeks. Practically all surplus and distress stocks were liquidated and tanners were producing leather only for firm orders for quick delivery. Owing to the strength of the raw-stock market, no tanners were willing to accept

orders or contracts for future delivery over any considerable period. Stocks of various types of leather in the hands of tanners showed the following declines during 1927: Sole leather, 42 per cent; cattle side upper leather, 28 per cent; patent side upper leather, 3 per cent; calf and kip upper leather, 24 per cent; goat and kid upper leather, 11 per cent; and sheep and lamb upper leather, 17 per cent. Quantities of various types of shoe leather held by tanners are shown, by months, for the last two years in Table 6.

Table 6.—Stocks of Shoe Leather in Hands of Tanners, by Months [1]

[All figures in thousands; unit of sole leather (cattle) is back, bend, or side; for side upper leather, the side; and for others, the skin]

Month	Sole leather (cattle)		Side upper leather		Calf and whole kip		Goat and kid		Sheep and lamb	
	1926	1927	1926	1927	1926	1927	1926	1927	1926	1927
January	4,977	2,628	2,126	1,798	4,086	4,056	12,452	12,868	2,146	2,020
February	4,774	2,562	2,149	1,955	4,209	3,996	12,968	12,936	2,042	1,901
March	4,617	2,500	2,304	1,979	4,437	4,100	13,196	13,219	2,073	1,877
April	4,528	2,595	2,433	1,936	4,458	3,940	13,662	13,566	2,110	2,001
May	4,438	2,550	2,265	1,675	4,515	3,702	14,285	13,678	2,183	1,966
June	4,251	2,406	2,068	1,401	4,371	3,403	14,750	12,573	2,189	1,960
July	4,105	2,267	1,980	1,305	4,110	3,191	14,375	12,330	2,158	2,008
August	3,801	2,078	1,947	1,290	3,926	3,102	13,943	11,690	2,063	1,853
September	3,477	1,908	1,805	1,346	3,778	2,910	13,629	11,596	1,942	1,596
October	3,347	1,843	1,772	1,599	3,729	2,917	13,808	11,774	1,964	1,558
November	3,138	1,765	1,743	1,418	3,818	3,077	13,206	11,786	2,116	1,619
December	2,888	1,669	1,804	1,295	3,918	2,952	13,022	11,739	2,045	1,703

[1] Figures for patent leather not included.

Source: Bureau of the Census.

FOREIGN TRADE

Exports of Leather.

Exports of leather in 1927 were valued at $54,004,000, an increase of approximately 8 per cent as compared with 1926. The increase in the price of leather during the last half of 1927 accounted for some of the increase in the value of exports for the year. All lines of upper leather showed a healthy increase, both in quantity and value, for the year, except black side upper, horse and colt upper, sheep and lamb, and miscellaneous upper leathers. Exports of sheep and lamb increased in quantity, but declined slightly in value. Exports of sole leather and harness leather showed further declines. Upholstery leather and bag, case, and strap leathers made notable advances. Exports of patent side upper leather increased by nearly 6,000,000 square feet. The steady normal growth of American exports of leather can be credited largely to the wider range in exports during recent years. In 1927 official statistics of the United States showed that American leather was sold in 97 of a possible 109 foreign markets. There has also been a decided increase in the shipments to many important markets. In 1923 there were 10 markets whose imports of leather from the United States were valued at more than $1,000,000, whereas in 1927 each of 16 foreign markets bought more than a million dollars' worth of American leather.

Table 7.—Value of Exports of Leather From the United States

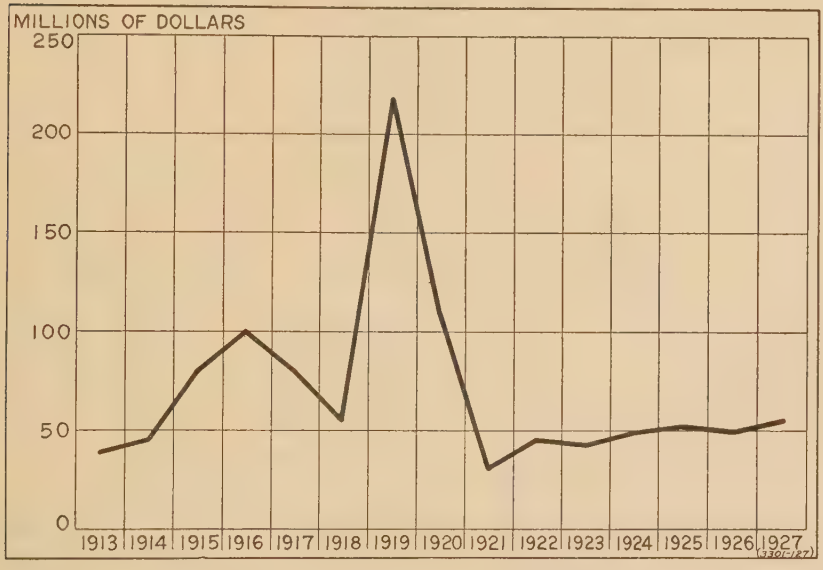
[Calendar years]

Yearly average or year	Value	Year	Value	Year	Value
1891–1895	$12, 690, 000	1914	$44, 975, 996	1922	$45, 471, 108
1896–1900	18, 936, 000	1915	80, 865, 037	1923	42, 834, 122
1901–1905	24, 628, 000	1916	100, 498, 137	1924	49, 188, 093
1906–1910	40, 479, 000	1917	80, 816, 987	1925	52, 155, 094
1911–1915	49, 477, 000	1918	55, 126, 527	1926	49, 814, 515
1916–1920	112, 820, 000	1919	218, 783, 300	1927	54, 004, 355
1921–1925	44, 287, 000	1920	108, 875, 567		
1913	38, 437, 687	1921	31, 787, 275		

Source: Bureau of Foreign and Domestic Commerce.

Table 7 shows changes in the total value of our leather exports since 1913, while Table 8 shows the quantity and value of our exports of each of the principal classes of leather for the past four years.

Chart II.—EXPORTS OF LEATHER



The total exports to the Far East showed a decline in value from 1926, largely because of unsettled political conditions in China and financial difficulties in Japan. Other markets in the Far East, however, showed considerable expansion. European countries increased their purchases of American leather in the latter part of the year, during the period of rapidly advancing prices, to replace depleted stocks. Exports of principal kinds of leather, by leading countries of destination, are shown in Table 9.

Table 8.—Exports of Leather From the United States, by Principal Classes

Article	Quantity (thousands of units specified)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Total					**49,188**	**52,155**	**49,815**	**54,004**
Upper leather (except patent):								
Cattle, side upper—								
Grain—sq. ft.	13,661	14,541	18,264	14,071	3,287	3,927	4,620	3,837
Finished splits—do	5,834	4,082	4,563	4,684	1,033	679	645	794
Wax and rough splits—lb.	3,714	3,145	2,855	3,488	979	1,001	840	1,579
Calf and whole kip—sq. ft.	25,606	29,276	31,726	32,790	8,255	9,935	10,200	10,719
Sheep and lamb—do	7,996	6,487	8,190	8,413	998	996	1,155	1,012
Goat and kid—do	38,784	45,242	48,546	52,646	10,455	12,579	13,486	15,085
Other upper leather—do	5,182	4,629	3,882	2,731	1,406	1,229	1,042	786
Patent upper leather:								
Cattle side—do	34,258	28,891	25,147	30,830	10,489	9,313	7,883	10,520
Goat and kid—do	6,003	5,399	3,235	2,512	2,543	2,447	1,442	1,161
Horse and colt—do	2,624	2,055	1,405	1,087	976	784	537	407
Other—do	507	640	827	1,353	153	185	276	469
Sole leather—lb.	22,467	19,327	13,459	9,817	5,085	5,013	3,846	3,145
Glove leather—sq. ft.	6,211	5,256	6,420	6,400	902	862	1,012	1,057
Other leather					2,626	3,205	2,830	3,433

Source: Bureau of Foreign and Domestic Commerce.

Table 9.—Exports of Principal Kinds of Leather, by Leading Countries of Destination

[Quantity in thousands of units specified; value in thousands of dollars]

Kind and country	Quantity		Value		Kind and country	Quantity		Value	
	1926	1927	1926	1927		1926	1927	1926	1927
	Lbs.	*Lbs.*	*Dolls.*	*Dolls.*		*Sq. ft.*	*Sq. ft.*	*Dolls.*	*Dolls.*
Sole leather	**13,459**	**9,817**	**3,846**	**3,145**	**Cattle side upper leather [2], [3]**	**22,828**	**18,755**	**5,265**	**4,631**
United Kingdom	3,333	1,737	666	346	Germany	1,342	691	378	152
Canada	542	449	215	216	Spain	3,598	3,507	928	1,014
Newfoundland and Labrador	233	145	73	56	Switzerland	225	1,362	43	455
China, Hong Kong, and Kwantung	4,278	2,945	1,249	881	United Kingdom	4,926	2,122	1,107	526
Japan [1]	3,157	2,530	1,041	968	Canada	2,767	1,864	451	291
Philippine Islands	976	748	276	243	Cuba	1,924	2,102	387	382
					Colombia	724	624	188	169
					Philippine Islands	1,429	1,132	268	240
Goat and kid upper leather [3]	*Sq. ft.* **48,546**	*Sq. ft.* **52,646**	**13,486**	**15,085**	**Calf and kip upper leather [2]**	**31,726**	**32,790**	**10,200**	**10,719**
Denmark	631	1,435	205	448	Germany	1,106	1,623	404	609
Germany	2,217	4,733	819	1,747	Italy	1,504	2,317	559	862
Poland and Danzig	1,622	3,368	441	979	Spain	1,907	2,518	648	804
Sweden	1,000	1,312	361	470	United Kingdom	9,604	6,328	2,679	1,863
Switzerland	1,029	308	313	91	Canada	1,122	905	374	302
United Kingdom	22,077	19,074	5,758	4,907	Cuba	1,303	1,589	388	450
Canada	3,850	3,517	1,058	1,046	Brazil	1,275	2,296	509	865
Brazil	786	1,407	247	425	Japan [1]	1,749	1,975	615	570
Australia	587	886	280	387					

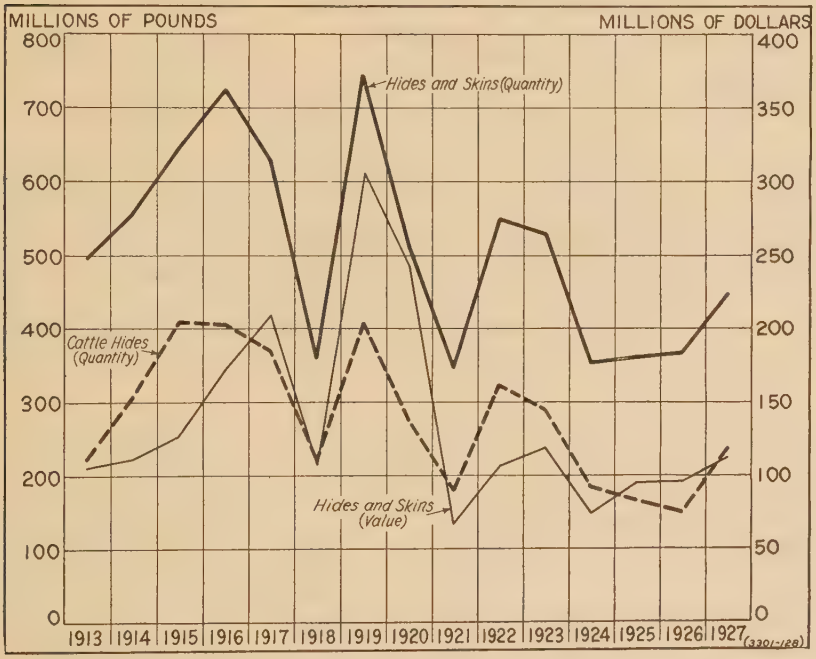
[1] Excludes Chosen. [2] Except patent. [3] Includes grain and finished splits only.
Source: Bureau of Foreign and Domestic Commerce.

Imports of Hides, Skins, and Leather.

Imports of raw hides and skins for 1927 amounted to 447,142,000 pounds, a quantity increase of 21 per cent as compared with 1926. The total value of imports of hides and skins for 1927 was $112,846,000 as compared with $96,811,000 in 1926. The average price per pound for imports of hides and skins was 25¼ cents as compared with 26½ cents in 1926. A marked quantitative gain occurred in the

imports of cattle hides. All other classes except miscellaneous showed a decline in quantity. Our imports of several types of raw hides and skins are derived from widely scattered sources. South America, particularly Argentina, ranks as the chief source of imported cattle hides, and Asia, especially British India and China, of goatskins. New Zealand, the United Kingdom, and Argentina were the principal sources of sheep and lamb skins. The large quantity reported as coming from the United Kingdom in 1927 represents chiefly reexports of skins originally imported from New Zealand and Australia. Canada, Germany, France, and Latvia were the principal

Chart III.—IMPORTS OF HIDES AND SKINS



sources of calfskins. Undoubtedly a large proportion of the skins credited to Latvia were of Russian origin.

Imports of leather registered a further marked increase in 1927, making new records for quantity and value. The total value of imported leather was $37,436,000, which was 31 per cent more than in 1926. The increases shown in the quantity of imports by principal types of leather were as follows: Calf and kip upper leather, 59 per cent; calf and kip lining leather, 68 per cent; patent leather, 47 per cent; and sole leather, 32 per cent. Imports of other classes of leather either remained stationary or showed slight declines. The four principal countries, in order of their importance, which supplied these imports, were the United Kingdom, Germany, Canada, and France.

Table 10.—Total Imports of Hides and Skins, Calendar Years 1891–1927

Yearly average or year	Quantity (1,000 pounds)	Value (1,000 dollars)	Year	Quantity (1,000 pounds)	Value (1,000 dollars)	Year	Quantity (1,000 pounds)	Value (1,000 dollars)
1891–1895	[1] 283,517	25,847	1912	615,105	121,169	1920	510,240	243,878
1896–1900	252,717	39,306	1913	497,879	105,893	1921	348,047	67,561
1901–1905	321,266	59,521	1914	556,195	112,320	1922	551,173	107,039
1906–1910	423,181	81,794	1915	646,271	127,389	1923	531,576	118,917
1911–1915	548,065	109,645	1916	727,310	172,603	1924	356,552	75,052
1916–1920	594,869	208,153	1917	631,066	209,730	1925	362,432	96,764
1921–1925	429,956	93,066	1918	361,891	108,044	1926	368,578	96,811
			1919	744,836	306,510	1927	447,142	112,846
1911	424,877	81,456						

[1] Year 1895 only.

Source: Bureau of Foreign and Domestic Commerce.

Table 11.—Imports of Hides and Skins Into the United States, by Classes

Yearly average or year [1]	Quantity (in thousands of pounds)					Value (in thousands of dollars)				
	Cattle hides	Calf and kip	Sheep and lamb	Goat and kid	All other	Cattle hides	Calf and kip	Sheep and lamb	Goat and kid	All other
1911–1915	282,882	77,958	66,980	86,242	34,023	49,864	20,242	11,464	21,538	6,537
1916–1920	335,709	39,903	81,152	93,871	44,235	90,625	17,100	28,884	59,988	11,555
1921–1925	229,808	44,416	61,247	72,760	21,726	33,592	10,560	15,220	29,629	4,065
1920	275,325	35,132	82,749	80,205	36,829	85,475	19,251	38,225	88,640	12,286
1921	180,186	47,938	45,854	63,126	10,943	23,259	10,363	8,014	23,871	2,053
1922	324,475	55,521	64,571	80,938	25,667	47,098	11,910	11,004	32,818	4,208
1923	291,969	48,698	76,109	85,853	28,947	46,605	11,370	17,587	37,730	5,626
1924	185,614	41,112	58,047	52,234	19,545	24,304	10,559	16,039	20,529	3,622
1925	166,793	28,812	61,650	81,648	23,529	26,695	8,599	23,459	33,196	4,814
1926	150,452	45,201	59,139	87,605	26,182	22,092	11,590	18,791	39,084	5,253
1927	237,234	44,069	57,349	81,304	27,187	41,360	13,109	16,148	35,488	6,741

[1] All figures calendar years.

Source: Bureau of Foreign and Domestic Commerce

Table 12.—Imports of Principal Kinds of Hides and Skins, by Principal Countries of Origin

Kind and country	Quantity (1,000 pieces)		Value (1,000 dollars)		Kind and country	Quantity (1,000 pieces)		Value (1,000 dollars)	
	1926	1927	1926	1927		1926	1927	1926	1927
Cattle hides	3,354	5,143	22,092	41,360	**Sheep and lamb skins—Continued.**				
France	50	111	452	991	Brazil	1,372	1,525	1,092	1,045
Italy	25	80	216	776	Chile	668	685	617	714
Canada	810	926	4,335	6,469	Uruguay	966	1,038	845	623
Argentina	1,616	2,492	12,237	22,892	Australia	669	640	555	479
Colombia	195	170	959	1,007	New Zealand	7,811	6,204	5,032	4,013
Uruguay	124	89	1,182	989	British South Africa	821	633	1,052	885
Australia	52	197	223	1,358					
New Zealand	78	122	342	851	**Goat and kid skins**	53,482	49,013	39,084	35,488
Kip and calf skins	7,590	6,973	11,590	13,109					
					France	1,085	735	932	612
France	567	763	1,505	2,402	Germany	826	746	871	599
Germany	1,145	1,026	1,554	1,796	Italy	1,175	869	1,000	779
Italy	118	199	324	633	Spain	1,811	909	2,224	1,298
Latvia	629	616	831	906	United Kingdom	1,228	831	837	535
Netherlands	218	407	413	733	Mexico	3,161	3,261	1,806	2,053
Sweden	526	329	916	685	Argentina	2,073	2,405	1,359	1,533
Switzerland	200	118	580	386	Brazil	3,305	3,976	2,539	3,189
Canada	1,123	1,312	1,539	2,105	Aden	1,645	1,800	819	788
					British India	19,640	18,758	14,100	13,916
Sheep and lamb skins	23,767	22,458	18,791	16,148	China	8,089	6,621	6,020	4,868
					Netherland East Indies	2,433	2,174	1,885	1,767
United Kingdom	3,753	4,541	3,192	2,909	British Africa	1,059	1,336	647	704
Argentina	3,320	3,500	2,812	2,679					

Source: Bureau of Foreign and Domestic Commerce.

LEATHER MANUFACTURES

SUMMARY.—Production of shoes in 1927 amounted to 343,606,000 pairs, which was an increase of 6 per cent, as compared with 1926, and was larger than in any other reported year except 1923. More women's shoes were manufactured than in any previous year and there were also increases over 1926 in the output of all other types of footwear. There were slight advances in the prices of most types of shoes during 1927.

Exports of leather manufactures to foreign countries in 1927 reached a value of $18,381,000, which was slightly below the value of exports in the preceding year. Consignments of leather goods to noncontiguous territories increased about 21 per cent. Imports of leather manufactures increased 26 per cent.

Table 13.—Leather Manufactures: Totals and Selected Individual Industries

Year and industry	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				In thousands of dollars			
1914	6,017	251,124	139,460	137,443	468,890	737,393	268,503
1919	5,717	276,886	164,776	275,248	1,067,285	1,681,639	614,354
1921	4,205	231,116	(1)	256,671	656,673	1,160,821	504,148
1923	4,271	284,842	182,811	314,846	761,595	1,391,187	629,592
1925	3,732	262,245	191,081	289,484	708,489	1,305,567	597,078
1914							
Belting, leather	151	2,951	7,385	2,070	15,480	23,036	7,556
Saddlery and harness	2,551	12,969	10,362	7,996	33,086	53,559	20,473
Trunks, suitcases, and bags	561	9,911	7,510	5,540	13,626	26,472	12,846
1923							
Belting, leather	169	3,160	9,075	3,895	24,569	37,723	13,154
Saddlery and harness	472	6,617	7,761	6,916	24,460	42,113	17,653
Trunks, suitcases, and bags	505	11,441	7,269	13,520	32,837	63,023	30,186
1925							
Belting, leather	168	2,644	6,889	3,505	18,868	31,811	12,943
Boot and shoe cut stock, not made in boot and shoe factories	244	7,197	7,859	7,978	65,646	84,220	18,574
Boot and shoe findings, not made in boot and shoe factories	326	8,605	15,419	9,695	29,248	52,064	22,816
Boots and shoes, other than rubber	1,460	206,992	139,569	225,788	481,632	925,383	443,751
Gloves and mittens, leather	247	8,378	3,852	7,814	20,021	37,164	17,143
Pocketbooks, purses, and card-cases	190	6,826	1,356	9,022	22,442	43,105	20,663
Saddlery and harness	258	4,570	5,021	5,060	18,776	30,084	11,308
Trunks, suitcases, and bags	475	10,348	7,893	13,226	31,382	61,224	29,842
Leather goods, n. e. s	364	6,685	3,223	7,396	20,474	40,512	20,038
Blackings, stains, and dressings	171	1,869	2,659	2,165	9,733	25,055	15,322

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

Position of the Industry.

The latest census of manufactures for which returns are available showed that the total value of products for the leather industries was $1,768,000,000 in 1925. Finished leather products were valued at $1,306,000,000, which was 74 per cent of the total. Of the finished products the boot and shoe industry represented 70.8 per cent; boot and shoe cut stock and findings not made in the shoe factories,

10.4 per cent; trunks, suit cases, and bags, 4.7 per cent; pocketbooks, purses, and cardcases, 3.3 per cent; gloves and mittens of leather, 2.8 per cent; leather belting, 2.4 per cent; saddlery and harness, 2.3 per cent; and leather goods not elsewhere specified, about 3 per cent. Massachusetts held first rank among the States in this industry during 1925, while New York and Missouri rank second and third in importance.

As compared with 1923 census statistics, there was a slight decrease in 1925 in the value of products of all branches except boot and shoe findings, which showed an increase of 8 per cent, and in pocketbooks, purses, and cardcases, which increased almost one-third.

BOOT AND SHOE INDUSTRY

Census Statistics of the Industry.

The boot and shoe industry, according to the biennial census, produced during 1925 in 1,460 establishments footwear and other products valued at over $925,000,000. Massachusetts, New York, Missouri, and Illinois manufactured about two-thirds of the total output of 323,553,000 pairs of footwear. The leading cities in the industry, according to the census, were New York, St. Louis, Brockton, Milwaukee, Boston, Chicago, Lynn, Manchester, Rochester, Auburn, Cincinnati, Philadelphia, Columbus, and Marlboro, each of which produced leather footwear valued at over $10,000,000 in 1925.

Table 14.—Boot and Shoe Industry (Other Than Rubber)

Year	Establishments	Wage-earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
1899	1,599	141,830	49,444	$58,440,883	$168,632,654	$258,969,580	$90,336,926
1909	1,343	185,116	85,896	92,359,152	277,467,743	442,630,726	165,162,983
1914	1,355	191,555	95,966	105,695,404	310,356,586	501,760,458	191,403,872
1919	1,449	211,049	115,886	210,734,610	715,269,315	1,155,041,436	439,772,121
1921	1,505	183,502	(1)	204,954,095	478,432,445	867,475,896	389,043,451
1923	1,606	225,216	128,550	250,345,922	527,456,868	1,000,078,022	472,621,154
1925	1,460	206,992	139,569	225,787,981	481,631,964	925,383,422	443,751,458

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

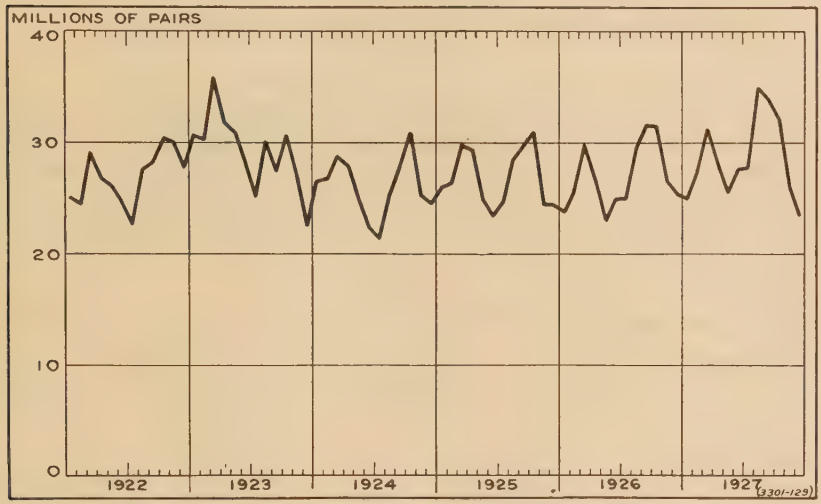
Production in 1927.

During 1927, 343,606,000 pairs of boots and shoes (other than rubber) were manufactured in the United States, an increase of 5.9 per cent in comparison with 1926. The output was larger than in any previous year on record, with the exception of 1923. The maximum monthly output of 35,060,000 pairs was in August, while production fell seasonally to a minimum of 23,525,000 pairs in December.

Of the total production 33.8 per cent consisted of women's shoes; 27.7 per cent were men's shoes; 11.6 per cent, shoes for misses and children; 7.1 per cent, boys' and youths'; and 19.8 per cent, miscellaneous footwear, including slippers. Production of all classes of shoes was larger than in 1926, increases being most pronounced in

the case of slippers for house wear and shoes for boys and youths. In previous years a considerable quantity of heavy work shoes for men was included in the athletic shoes, whereas this type of footwear in 1927 was grouped with men's shoes; consequently, the quantity of men's shoes in 1927 was not strictly comparable with that of previous years. Of the total shoe production, Massachusetts

Chart IV.—PRODUCTION OF FOOTWEAR (OTHER THAN RUBBER)



manufactured 23 per cent, New York, 22 per cent, and Missouri 14 per cent. Massachusetts produces the largest quantity of men's shoes, women's shoes, and shoes for misses and children, while New York has the largest output of shoes for boys and youths and of miscellaneous footwear, including slippers.

Table 15.—Production, Exports, and Imports of Footwear (Other Than Rubber)

[Thousands of pairs]

Item	1914	1921	1922	1923	1924	1925	1926	1927
Production, total	**292, 666**	**286, 771**	**323, 876**	**351, 114**	**313, 230**	**323, 553**	**324, 514**	**343, 606**
Men's	98, 031	69, 458	89, 984	100, 283	84, 663	86, 546	86, 644	[1] 95, 328
Boys' and youths'	22, 896	18, 462	21, 632	22, 239	20, 274	21, 021	21, 111	24, 229
Women's	80, 916	101, 474	105, 368	109, 676	104, 135	104, 782	110, 447	116, 259
Misses' and children's	48, 322	35, 065	39, 443	40, 136	35, 694	38, 691	38, 577	39, 650
Infants'	15, 477	17, 379	23, 939	27, 015	23, 823	24, 587	24, 041	24, 542
All other	27, 024	44, 933	43, 510	51, 765	44, 641	47, 926	43, 694	43, 598
Athletic and sporting (leather)	[2]	5, 547	8, 448	6, 434	5, 853	5, 914	5, 318	[1] 2, 478
Canvas and other textile fabrics	[2]	8, 602	6, 739	8, 347	6, 260	8, 564	4, 790	3, 301
Not specified, including slippers	[2]	30, 784	28, 323	36, 984	32, 528	33, 448	33, 586	37, 819
Exports, total (calendar year)	11, 455	10, 376	7, 080	9, 910	8, 504	8, 888	8, 002	8, 235
Foreign countries	10, 181	9, 019	5, 643	7, 697	6, 607	6, 875	6, 047	5, 869
Noncontiguous territories	1, 274	1, 357	1, 437	2, 213	1, 897	2, 013	1, 955	2, 366
Imports	[3] 421	[3] 146	643	1, 938	2, 652	1, 985	2, 355	3, 004

[1] Figures not strictly comparable with earlier years. Considerable quantities of heavy footwear now included with men's shoes were included with "Athletic and sporting shoes (leather)," prior to 1927.
[2] Not separately shown.
[3] Boots and shoes only, slipper statistics not available; data for 1914 estimated.

Sources: Bureau of the Census and Bureau of Foreign and Domestic Commerce.

Table 16.—Production of Footwear (Other Than Rubber), by Months

[Thousands of pairs]

Month	1923	1924	1925	1926	1927	Month	1923	1924	1925	1926	1927
January	30,744	26,497	26,077	23,874	24,993	July	25,256	21,390	24,758	25,052	27,775
February	30,301	26,832	26,455	25,698	27,292	August	30,028	25,473	28,486	29,646	35,060
March	35,836	28,864	29,886	29,928	31,276	September	27,555	27,716	29,769	31,674	33,933
April	31,868	28,004	29,476	26,637	28,389	October	30,705	30,826	31,056	31,662	32,267
May	30,926	25,240	25,107	23,129	25,626	November	26,946	25,322	24,630	26,758	25,973
June	28,273	22,464	23,449	25,041	27,497	December	22,676	24,602	24,404	25,415	23,525

Source: Bureau of the Census.

Price Movement.

Table 17 shows wholesale prices of certain popular styles of shoes. Prices in 1920, the peak year, were more than twice as high as in 1913. They fell sharply in the two following years and have since shown but little change. Prices of practically all types of shoes showed slight increases during the summer of 1927 and averaged higher than for the year 1926.

Table 17.—Average Wholesale Prices, in Dollars per Pair, of Leather Boots and Shoes

Year	Men's				Women's		Youths'
	Black calf, Goodyear welt, blucher	Black calf, Goodyear welt, bal	Black vici kid, Goodyear welt	Tan side leather, Goodyear welt, dress	Colored calf, Goodyear welt, lace oxford	Patent-leather, McKay sewed, pump	Tan calf blucher
1905	$2.57	(1)	$2.20	(1)	(1)	(1)	(1)
1913	3.11	$3.17	2.87	$2.24	(1)	$1.38	(1)
1919	7.60	7.10	7.25	5.08	(1)	4.08	(1)
1920	8.95	7.50	8.34	5.34	(1)	4.87	(1)
1921	7.00	4.80	6.40	3.56	$5.21	4.01	(1)
1922	6.51	4.61	5.83	3.31	4.00	3.60	(1)
1923	6.43	4.85	6.00	3.35	4.13	3.60	(1)
1924	6.25	4.88	6.00	3.32	4.12	3.58	(1)
1925	6.39	5.13	6.00	3.39	4.15	3.60	(1)
1926	6.40	4.92	6.00	3.38	4.15	3.60	$1.66
1927	6.43	4.93	6.08	3.46	4.20	3.68	1.73

[1] Data not available.

Source: Bureau of Labor Statistics, Department of Labor.

Foreign Trade.

Exports of leather footwear to foreign countries declined 2.9 per cent in quantity and 2.8 per cent in value in 1927, as compared with 1926, partly as a result of tariff changes, increased local production, and unfavorable financial conditions in certain foreign countries. The relative importance of our principal foreign markets as measured by the quantity of shoes exported was as follows in 1927: Cuba, 42 per cent; Canada, 10 per cent; and the Dominican Republic, Jamaica, and Panama, each slightly less than 5 per cent. The quantity and value of exports of footwear to principal foreign markets are shown in Chart V and Table 18.

Chart V.—LEATHER FOOTWEAR: TOTAL EXPORTS, EXPORTS TO IMPORTANT FOREIGN MARKETS, AND SHIPMENTS TO NONCONTIGUOUS TERRITORIES

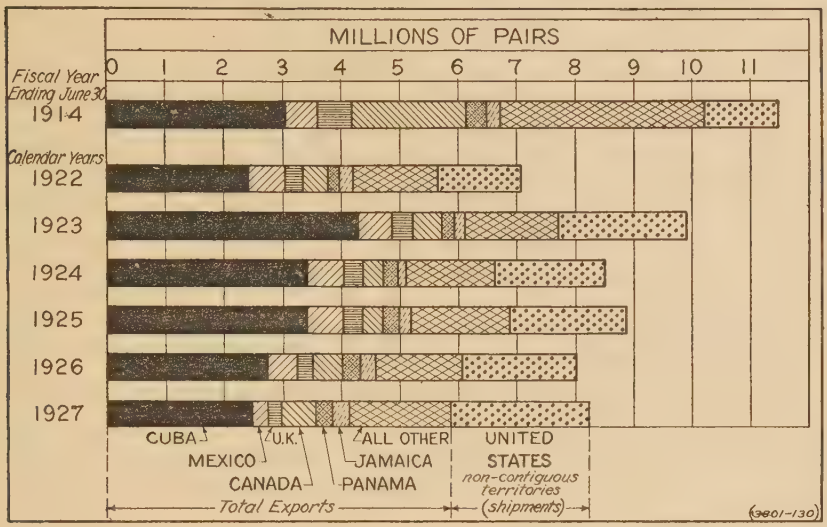


Table 18.—Exports of Leather Footwear to Principal Foreign Countries and Shipments to Noncontiguous Territories

Country	Number (thousands of pairs)				Value (thousands of dollars)				Value in 1927 (thousands of dollars)			
	1914[1]	1925	1926	1927	1914[1]	1925	1926	1927	Men's and boys'	Women's	Children's	Miscellaneous, including slippers
Foreign countries	10,205	6,875	6,047	5,869	18,230	15,667	13,279	12,900	7,043	4,277	1,170	410
British South Africa	85	24	25	50	198	63	55	88	32	11	[2]	45
Canada	1,930	341	511	584	3,391	867	1,253	1,533	377	1,013	28	115
Cuba	3,037	3,399	2,747	2,486	3,353	7,151	5,148	4,549	3,080	671	764	34
Dominican Republic	174	403	184	290	209	714	379	536	201	257	60	18
Honduras	117	122	88	120	239	291	199	271	119	127	22	3
Jamaica	230	209	263	290	257	329	413	438	192	207	32	7
Mexico	569	629	483	274	1,146	1,897	1,400	844	575	226	23	20
Newfoundland and Labrador	88	144	119	102	133	231	188	152	55	64	24	9
Panama	369	271	298	289	716	629	690	709	489	161	49	10
Philippine Islands	400	173	102	83	776	416	265	213	142	50	11	10
South America	708	200	257	314	1,940	527	683	841	470	273	61	37
Colombia	23	154	214	273	42	389	561	726	385	265	60	16
United Kingdom	583	329	265	229	1,324	917	813	717	223	472	9	13
Other countries	1,915	631	705	758	4,548	1,635	1,793	2,009	1,088	745	87	89
Noncontiguous territories[3]	1,279	2,013	1,955	2,366	1,835	3,995	3,783	4,544	2,324	2,220	[2]	[4]
Alaska	98	44	47	54	276	151	168	194	124	70	[2]	[4]
Hawaii	192	263	250	288	367	823	732	839	527	312	[2]	[4]
Porto Rico	989	1,706	1,658	2,024	1,192	3,021	2,883	3,511	1,673	1,838	[2]	[4]

[1] Fiscal year ended June 30.
[2] Less than $500.
[3] Shipments to noncontiguous territories classified as men's and boys', women's and children's.
[4] Not segregated.
Source: Bureau of Foreign and Domestic Commerce.

Exports of leather shoes for men and boys decreased by about 113,000 pairs in 1927, owing principally to a decrease in the Cuban demand. Exports of men's and boys' shoes to Mexico were also smaller, while exports to Colombia and Canada showed increases.

Exports of women's shoes decreased by about 116,000 pairs, which is also largely the result of smaller demand from Cuba and Mexico. Exports of this type of footwear to Canada have been increasing since 1924 and in 1927 amounted to 278,000 pairs. Colombia, our leading South American market, has been increasing its purchases of women's shoes; in 1927 such purchases were over four times as large as in 1924. There has been a slight decline in trade with the United Kingdom.

In 1927 exports of children's shoes showed a slight increase. Cuba, the Dominican Republic, and Colombia were the principal markets. Exports of leather slippers increased 21 per cent in quantity and were shipped largely to Canada, British South Africa, and Cuba. The demand for athletic and miscellaneous footwear was considerably smaller in 1927. British India was the most important market for this type of goods.

Shipments to Noncontiguous Territories.

Shipments of leather footwear to Porto Rico increased 22 per cent in 1927, while shipments to Alaska and Hawaii increased 15 per cent. (Table 18.) The largest share of this trade with noncontiguous territories consisted of consignments to Porto Rico, which reached a value of about $3,500,000. Shipments of women's and children's shoes to Porto Rico were larger than those of men's and boys' shoes, while shoes for men and boys predominated in the trade with both Alaska and Hawaii.

Imports of Leather Boots and Shoes.

Of 1,477,000 pairs of leather boots and shoes imported free of duty in 1927, Czechoslovakia supplied 37 per cent, Switzerland 18 per cent, the United Kingdom 17 per cent, and France 13 per cent. Women's shoes constituted about two-thirds of these imports in 1927, a much higher proportion than in any other recent year. Czechoslovakia supplied over one-half of the women's shoes. Of 306,000 pairs of men's and boys' shoes valued at $1,562,000, imported free of duty during 1927, the United Kingdom supplied 72 per cent. Switzerland supplied 70 per cent of the imports of children's shoes, which reached a total value of $402,000.

Czechoslovakia supplied the United States with 179,000 pairs of leather slippers (free of duty), valued at $203,000, which constituted 39 per cent of the total importation of 460,000 pairs. Imports from Czechoslovakia increased 70 per cent over 1926.

The United States imported, in 1927, 1,066,000 pairs of dutiable footwear, valued at $311,000; Japan was the leading source of supply.

Chart VI.—IMPORTS OF LEATHER FOOTWEAR

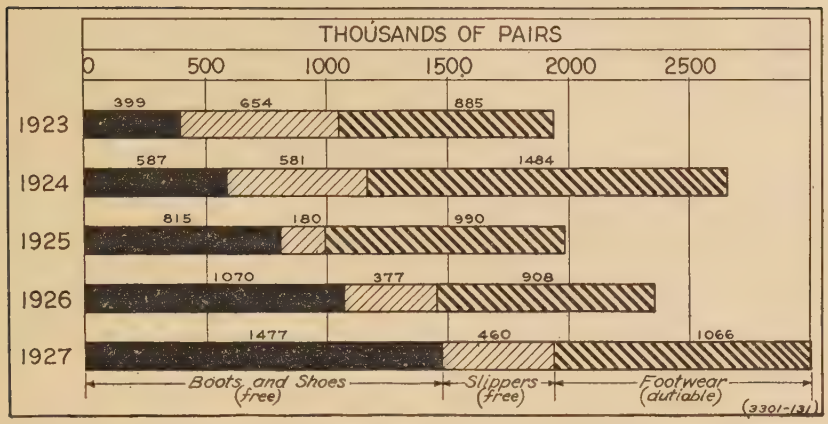


Table 19.—Value of Exports, Shipments to Noncontiguous Territories, and Imports of Leather Manufactures and Related Articles

[Thousands of dollars]

Item	1921	1923	1924	1925	1926	1927	Per cent change, 1927 from 1926
EXPORTS TO FOREIGN COUNTRIES							
Total leather manufactures	28,764	22,244	19,835	20,563	18,528	18,381	−0.8
Footwear, total	24,776	17,966	15,413	15,667	13,279	12,900	−2.9
Boots and shoes—							
Men's and boys'	16,319	10,030	8,363	8,567	7,295	7,043	−3.5
Women's	5,016	5,303	4,930	5,060	4,379	4,277	−2.3
Children's	3,343	2,184	1,778	1,692	1,179	1,170	−.8
Slippers	98	295	157	224	260	296	+13.8
Athletic and miscellaneous footwear	[1]	154	185	124	166	114	−31.3
Gloves	35	132	229	283	141	132	−6.4
Harness and saddlery	697	691	738	537	573	286	−50.1
Bags and suit cases	[2]	260	242	293	315	185	−41.2
Pocketbooks and purses	[2]	260	185	239	318	485	+52.5
Belting	1,423	1,690	1,668	1,993	1,996	[3] 1,877	----------
Leather goods, not specified	1,833	1,245	1,360	1,551	1,906	[3] 2,516	----------
Shoe findings	1,614	1,729	1,552	1,578	1,447	1,365	−5.7
Blackings, polishes, and stains	1,334	1,660	1,786	1,826	1,624	1,636	+.7
Trunks	[1]	346	380	473	497	533	+7.2
SHIPMENTS TO NONCONTIGUOUS TERRITORIES							
Total leather manufactures	3,121	5,106	4,168	4,473	4,229	5,116	+21.0
Boots and shoes	2,769	4,594	3,653	3,995	3,783	4,544	+20.1
Men's and boys'	[1]	[1]	[1]	2,400	1,965	2,324	+18.3
Women's and children's	[1]	[1]	[1]	1,595	1,818	2,220	+22.1
Harness and saddlery	56	104	93	69	45	51	+14.0
Leather goods, not specified	296	408	422	409	401	521	+29.9
Shoe findings	[1]	[1]	[1]	74	91	101	+11.5
Blackings, polishes, and stains	[1]	83	93	97	86	106	+22.8
IMPORTS							
Total leather manufactures	15,365	[4] 11,317	12,178	[4] 13,858	17,207	21,657	+25.9
Boots, shoes, and slippers	573	[4] 1,888	2,844	[4] 2,915	4,033	5,918	+46.7
Boots and shoes (free)	[1]	1,246	1,995	2,429	3,381	5,200	+53.8
Slippers (free)	[1]	280	302	131	321	407	+26.8
Other footwear (dutiable)	----------	358	547	351	331	311	−6.0
Gloves	13,090	6,882	6,544	7,510	8,918	10,569	+18.5
Leather goods, not specified	1,702	2,547	2,790	3,433	4,256	5,170	+21.5

[1] Not separately shown.
[2] Included in "Leather goods, not specified."
[3] New belting only; data for secondhand leather belting included with "Leather goods, not specified," for 1927.
[4] Figures include $3,797 for 1923 and $3,787 for 1925 for "Other footwear," (free).

Source: Bureau of Foreign and Domestic Commerce.

SHOEMAKERS' SUPPLIES

Shoemakers' supplies in 1925 were manufactured in 632 establishments and the value of products was over $145,000,000. Of these establishments 326 manufactured shoe findings, such as shoe pegs, bows, clasps, stays, metal tips and heel plates, toe caps, buckles, heel caps, staples, counters, shanks, wooden heels, welting, shoe trimmings, and boot and shoe laces, valued at $52,064,000; 244 establishments manufactured cut stock valued at $84,220,000; and 62 establishments produced lasts and related products, such as shoe trees, shoe stretchers, and display forms for boots and shoes, valued at $9,301,000. Massachusetts led in value of production for all three of these industries, while Missouri ranked next in importance for both findings and cut stock.

In 1927 the United States exported shoe findings valued at $1,365,000 to foreign countries and shipped to noncontiguous territories goods valued at $101,000. Of the total exportation of heels, counters, etc., the United Kingdom received 70 per cent. Canada was the largest foreign market for other shoe findings, taking goods valued at $430,000. The trade with noncontiguous territories increased in value 11 per cent as compared with 1926. Porto Rico increased its purchases of shoe findings from 173,000 pounds in 1926 to 228,000 pounds in 1927.

LEATHER BELTING

According to the latest census of manufactures (1925) the 168 establishments in the United States which were engaged primarily in the manufacture of leather belting for use in the transmission of power had products valued at $31,811,000, a decrease of 16 per cent as compared with 1923.

In 1927 exports of new leather belting were segregated for the first time and data for secondhand leather belting were included with miscellaneous leather goods. Exports amounted to 1,242,000 pounds and were valued at $1,877,000. British India was the leading country of destination for exports of new leather belting.

LEATHER GLOVES

In 1925 the production of leather gloves in the United States was valued at $37,164,000. Gloversville, N. Y., manufactured leather gloves valued at $11,500,000, while the production of Johnstown, N. Y., and of Milwaukee, Wis., each exceeded $4,000,000.

Glove manufacturers in 1927 exported 166,000 pairs of leather gloves, valued at approximately $132,000, an increase of 6.2 per cent in quantity and a decrease of 6.4 per cent in value. The United Kingdom and Cuba were the principal destinations.

Imports of gloves in 1927 were 10,476,000 pairs, of which about 98 per cent were for women and children. The total value of glove imports was $10,569,000, 18 per cent more than in 1926. Of the total importation of gloves for women and children, France supplied 44 per cent and Germany 29 per cent.

HARNESS AND SADDLERY

Harness and saddlery manufactured in the United States in 1925 were valued at $30,084,000, a decrease of 29 per cent as compared with 1923 production. Of the 1927 output, goods valued at $286,000 were exported to foreign countries. Cuba, the leading market, received 39 per cent of the total. Goods consigned to noncontiguous territories of the United States were valued at $51,000.

LUGGAGE INDUSTRY

Production of trunks, bags, and suitcases in 1925 was valued at $61,224,000, a decrease of 3 per cent as compared with 1923. About one-quarter of this industry is concentrated in New York State.

During 1927 the United States exported to various foreign countries luggage valued at $718,000 (bags and suitcases $185,000, and trunks $533,000). The value of the trunks exported in 1927 represents an increase of 7.2 per cent over 1926, while that of bags and suitcases decreased 41 per cent. Argentina, the United Kingdom, and the Netherland West Indies were the leading export markets for trunks in 1927, while Canada was the principal destination for bags and suitcases.

LEATHER POCKETBOOKS, PURSES, AND CARDCASES

The 1925 Census of Manufactures shows that the production of pocketbooks, purses, and cardcases was valued at $43,105,000, an increase of 32 per cent over 1923. Over two-thirds of this industry is concentrated in New York City. Exports have increased substantially in recent years and in 1927 were valued at $485,000, over twice as much as in 1925. Most of the exports were destined for Canada or the countries of Latin America.

MISCELLANEOUS LEATHER GOODS

Miscellaneous leather goods covering a range from leather garments, puttees, hat sweats, belts, and razor strops to dog harness, leather novelties, and secondhand leather belting, were exported in 1927 to a value of $2,516,000. Canada received goods valued at 34.4 per cent of the total; Mexico, 12 per cent; the United Kingdom, 9.2 per cent; Italy, 7.4 per cent; and Cuba, 4.2 per cent. The noncontiguous territories were consigned miscellaneous leather manufactures representing a valuation of $521,000, an increase of 30 per cent over 1926.

BLACKINGS, POLISHES, STAINS, AND DRESSINGS

In 1925, 171 establishments were engaged primarily in the manufacture of blackings, stains, and dressings, with an output valued at approximately $25,000,000 which was about 3½ per cent less than in 1923.

In 1927, the United States exported 3,512,000 pounds of shoe polish, valued at $994,000, and 3,380,000 pounds of other blackings, stains, and dressings, valued at $642,000. In addition, 439,996 pounds, valued at $105,759, were consigned to the noncontiguous territories. Exports to foreign countries increased in value less than 1 per cent, while consignments to noncontiguous territories increased 23 per cent as compared with 1926. Cuba was the leading foreign market for shoe polish, while Canada was the principal destination for other blackings and stains.

PAPER AND PRINTING

SUMMARY.—The total paper production of the United States was 10,000,000 short tons in 1926, according to unofficial estimates. The output of newsprint, which in 1926 was 1,678,000 tons, decreased in 1927 to 1,486,000 tons, according to the News Print Service Bureau. Average prices declined from the 1926 level; book paper and pulp showed the largest decreases, while there was an increase late in 1927 for boards. Imports of base stocks, paper, and printed matter in 1927 amounted to $276,000,000, an increase of less than 1 per cent compared with 1926. Newsprint paper increased by about 6 per cent in value, while imports of pulp decreased. Exports of paper and paper products in 1927 increased over 5 per cent as compared with 1926. The value of books and printed material exported increased 10 per cent.

GENERAL POSITION AND CHARACTER

Among the 16 major groups into which the Bureau of the Census divides manufacturing industries the group of pulp, paper, printing, and allied industries in 1925, the latest year for which returns are available, ranked seventh from the standpoint of value of products, the same relative position as in 1923. The growth of both the paper and printing industries, by census years since 1899, together with the status of the subsidiary branches in 1925, is shown in Table 1. Detailed data on several important branches of the printing, publishing, and engraving industry are shown in Table 10.

The total number of establishments in operation in 1925 was approximately the same as in 1899, but the number of wage earners increased 80 per cent and the primary horsepower utilized was over three times as great in 1925 as in 1899.

PULP, PAPER, AND PAPER MANUFACTURES

The United States ranks first among the paper-producing countries of the world, with Germany, Canada, and Great Britain following. Data for the production of paper in this country during 1927 are not yet available, but of the total world production in 1926 the United States produced and consumed well over 50 per cent.

The development of the kraft pulp and paper industry in the South continued and the industry in the Pacific Northwest has expanded to a marked degree, several new mills having been erected and placed in operation during the past two years. This is a somewhat recent development which has as a background an abundance of both raw material and hydroelectric power in the Northwest.

Table 1.—Paper and Printing Industries

NOTE.—The cost of materials and value of product in each group involves some duplication owing to the use of the product of one establishment as material for another. No combined totals for the group as a whole are given on account of the still greater duplication. Value added by manufacture is a net figure.

Industry and year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				Thousands of dollars			
The group as a whole:							
1899	26,638	298,820	897,348	140,799			393,480
1914	37,209	453,006	2,039,073	296,566			875,548
1919	36,424	510,049	2,346,682	564,722			1,706,631
1921	25,377	467,256	(1)	637,432			1,818,193
1923	25,799	527,019	2,743,529	743,050			2,227,870
1925	26,553	536,766	3,060,794	805,516			2,529,450
Paper and wood pulp:							
1899	763	49,646	761,943	20,746	70,530	127,326	56,796
1914	718	88,457	1,611,954	53,246	213,181	332,147	118,966
1919	729	113,759	1,849,699	135,691	467,483	788,060	320,577
1921	738	105,294	(1)	127,029	445,992	667,436	221,444
1923	746	120,677	2,178,623	151,477	573,727	907,347	333,620
1925	763	123,842	2,427,010	160,146	605,860	971,882	366,022
Manufactures of paper not made in paper mills:							
1899	1,143	41,283	19,984	13,124	31,281	60,755	29,474
1914	1,711	74,630	78,740	33,473	93,741	174,681	80,940
1919	1,919	90,497	109,692	73,526	240,589	440,866	200,277
1921	1,837	76,290	(1)	71,537	208,080	385,747	177,667
1923	1,907	93,866	124,664	93,544	289,220	524,126	234,906
1925	1,931	93,834	136,982	98,683	300,800	558,529	257,729
Printing and publishing and allied industries:							
1899	23,814	195,260	107,647	99,816	103,654	395,187	291,533
1914	33,471	272,092	327,103	195,510	257,848	901,535	643,687
1919	32,476	287,278	361,124	331,519	571,510	1,699,789	1,128,279
1921	21,850	268,081	(1)	407,687	647,296	1,999,915	1,352,619
1923	22,122	291,029	405,194	459,856	647,975	2,222,537	1,574,562
1925	22,725	296,324	458,842	502,114	673,985	2,482,065	1,808,080
Other industries related to printing and publishing:							
1899	918	12,631	7,774	7,113	9,243	24,920	15,677
1914	1,309	17,827	21,276	14,336	16,496	48,452	31,956
1919	1,300	18,515	26,167	23,986	28,619	86,117	57,498
1921	952	17,591	(1)	31,179	31,003	97,466	66,463
1923	1,024	21,447	35,048	38,173	33,496	118,278	84,782
1925	1,134	22,766	37,960	44,573	33,590	131,209	97,619
MANUFACTURES OF PAPER, 1925							
Boxes, paper	1,229	57,148	76,185	57,172	151,712	281,944	130,232
Bags, paper, exclusive of those made in paper mills	66	5,585	6,414	5,524	29,957	45,978	16,021
Envelopes	135	9,052	10,288	9,987	27,423	51,189	23,766
Labels and tags	113	5,356	4,808	6,730	13,096	28,046	14,950
Paper patterns	16	1,243	813	1,595	2,001	13,666	11,665
Card cutting and designing	49	1,086	1,355	1,084	2,436	6,201	3,765
Cardboard, not made in paper mills	13	978	1,795	1,188	3,475	7,288	3,813
Paper goods, not elsewhere classified	310	13,386	35,324	15,403	70,700	124,217	53,517

[1] Not called for in schedule for 1921.

Source: Bureau of the Census.

PRODUCTION

The biennial census of 1925 places the number of wage earners employed by the pulp and paper industry at about 124,000 and the value of the products at approximately $972,000,000. There were 1,913 paper machines in operation in the United States at the end of 1926, with a total capacity of 12,000,000 short tons, while actual

production was about 9,750,000 tons, or 83 per cent. During 1927 machinery manufacturers reported the installation of 29 new paper machines with an annual capacity of 426,000 tons. These, together with improvements in existing machinery, increased the total capacity for the year by about 700,000 tons.

Pulpwood Consumption and Wood Pulp Production.

No census data for pulpwood cut in 1927 are available, but, according to the Forest Service, 12,341,000 cords of wood were required for the manufacture of paper in the United States during 1926. Of the total quantity used 44.4 per cent was from domestic sources, 40.3 per cent came from Canada, and the remainder was imported from other foreign countries. (Table 2.)

Table 2.—Source of Pulpwood Used for Paper Consumed in and Exported From the United States

[Wood pulp and paper, imported or exported, converted into terms of pulpwood. In thousands of cords]

Item	1899	1904	1909	1914	1919	1921	1923	1925	1926
PULPWOOD CONSUMED									
Total	2,075	3,397	4,572	6,071	7,426	6,888	10,113	10,965	12,341
For:									
Domestic requirements	1,950	3,259	4,420	5,886	6,806	6,649	9,924	10,753	12,129
Export	125	138	152	185	620	239	189	212	212
Source:									
Domestic	1,617	2,476	3,210	3,642	4,446	3,740	4,637	5,006	5,479
Imported from Canada	420	763	1,025	1,630	2,741	2,378	3,859	4,235	4,973
Other imports	38	158	337	799	239	770	1,617	1,724	1,889
Per cent from each source:									
Domestic	78.0	72.9	70.2	60.0	59.9	54.3	45.8	45.7	44.4
Imports from Canada	20.2	22.5	22.4	26.8	36.9	34.5	38.2	38.6	40.3
Other imports	1.8	4.6	7.4	13.2	3.2	11.2	16.0	15.7	15.3

Source: Forest Service, Department of Agriculture.

Total wood-pulp production in the United States in 1926, according to the Bureau of the Census, was 4,395,000 short tons as compared with 3,962,000 tons in 1925, an increase of over 10 per cent. In the manufacture of this pulp 6,766,000 cords of pulpwood at an average value of $14.96 per cord were consumed in 1926, as against 6,094,000 cords at an average value of $15.48 in 1925. Prices of pulpwood ranged from $6.48 per cord in Louisiana to $22.36 in Massachusetts. The great bulk of this pulp was consumed by the producing plant for the manufacture of paper. During 1926 the most important pulp-producing States were Maine, New York, and Wisconsin, which together provided nearly 57 per cent of the total.

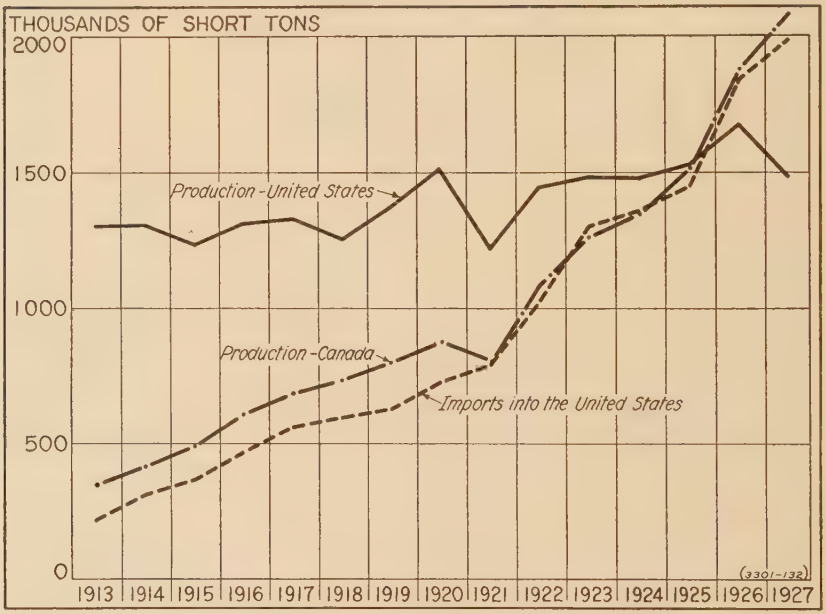
Production of Paper.

The total production of paper during 1925 was 9,182,000 tons. The American Paper and Pulp Association estimates 1926 production to have been approximately 10,000,000 tons, which was an increase of about 9 per cent over the record production of the pre-

vious year. According to the association's estimate, board of all kinds ranked first in actual tonnage output in 1926 with 3,650,000 tons, while newsprint, wrapping, and book paper followed in the order named.

In 1925 Canada for the first time exceeded the United States in newsprint production and since that time has remained the world's largest producer. The United States ranks second among the producing nations.

Chart I.—NEWSPRINT PAPER: PRODUCTION IN THE UNITED STATES AND CANADA, AND IMPORTS INTO THE UNITED STATES



In comparing the total annual production data shown in Table 3 with the quantity data for the last four years shown in Table 4 it should be noted that in the former the figures as given are based on the comprehensive returns from the biennial census, while in the latter the sources of the figures are several trade associations whose reporting memberships do not include the entire industry, although the items reported upon are the same in each instance. This fact will account for the evident difference in the total production shown in these tables. The quarterly data for 1926 and 1927 in Table 4 are useful for purposes of comparison, since no official census figures are yet available for any year since 1925.

Table 3.—Production of Paper and Wood Pulp—Census Returns

[Quantities in thousands of short tons; values in thousands of dollars]

Product	Quantity					Value				
	1914	1919	1921	1923	1925	1914	1919	1921	1923	1925
Total paper	**5,270**	**6,099**	**5,431**	**8,029**	**9,182**	**291,588**	**673,049**	**585,735**	**812,509**	**362,589**
Standard newsprint, in rolls and sheets	1,313	1,324	1,237	1,521	1,563	52,943	98,559	114,315	110,865	106,083
Hanging	97	69	57	111	105	4,489	6,043	5,949	10,285	9,506
Poster, novel, tablet, lining, etc.	[1] 8	80	35	55	84	[1] 491	7,273	4,174	4,960	7,096
Book [2]	904	951	792	1,208	1,328	70,102	142,280	122,930	169,286	175,525
Cover	22	22	16	21	24	2,809	5,643	4,112	4,973	5,806
Fine	248	325	231	377	474	34,055	87,741	61,314	89,098	105,474
Wrapping (or coarse)	[3] 911	[3] 858	827	1,184	1,292	[3] 51,308	[3] 108,529	103,259	141,532	143,587
Boards	1,292	1,867	1,740	2,793	3,287	44,870	124,091	104,346	182,867	192,942
Tissue	115	191	186	251	281	11,536	40,696	33,647	44,144	45,735
Absorbent	14	13	12	16	51	1,458	3,209	2,667	3,777	10,000
Building	244	195	217	345	[4] 555	9,476	17,737	12,842	23,529	[4] 44,031
All other [2]	[3] 103	[3] 201	81	148	138	[3] 8,053	[3] 31,247	16,179	27,195	16,803
Wood pulp:										
Total [5]	2,893	3,518	2,876	3,789	3,962					
For sale or transfer	912	1,100	868	1,063	913	31,678	80,095	63,374	65,497	55,200

[1] Reported as poster only.
[2] Excludes plate, lithograph, map, woodcut, etc., which was included in "All other paper" for 1923 to avoid disclosing operations of individual establishments. Corresponding data for 1914, 1919, 1921, and 1925 also included in "All other paper" to preserve comparability.
[3] Figures are not strictly comparable with later years, owing to the exclusion in these years of bag paper which was not reported separately but included in "All other paper" and which since 1919 has been reported under "wrapping (or coarse) paper."
[4] Not strictly comparable with earlier years owing to a change in classification.
[5] Figures include wood pulp consumed in mills in which manufactured.

Source: Bureau of the Census.

Table 4.—Estimated Production of Specified Kinds of Paper

[In thousands of short tons]

Quarter or month	Paper							Wood pulp	
	Total	Newsprint	Box board	Book	Wrapping	Writing (fine)	All other	Mechanical	Chemical
1924									
January–March	1,877	369	582	302	271	97	257	478	618
April–June	1,845	385	528	314	240	96	282	551	610
July–September	1,792	348	559	293	242	84	267	329	537
October–December	1,914	369	560	322	263	94	307	391	625
1925									
January–March	1,971	372	578	326	274	113	308	428	633
April–June	1,953	391	564	323	265	112	298	528	608
July–September	1,965	364	615	311	270	107	296	320	588
October–December	2,033	403	616	324	279	117	295	433	641
1926									
January–March	2,084	416	620	342	271	121	314	439	662
April–June	2,089	428	637	338	260	117	309	542	671
July–September	2,074	415	663	320	267	110	299	389	657
October–December	2,073	418	609	346	277	112	312	479	684
1927									
January–March	2,014	389	583	355	276	108	303	438	672
April–June	2,012	386	617	325	267	117	300	456	649
July–September	2,001	361	648	320	269	108	295	303	629
October–December	1,995	350	625	331	275	114	300	392	739
December, 1924	624	121	171	106	88	31	101	123	199
December, 1925	661	137	190	108	90	38	91	152	209
December, 1926	639	135	165	118	89	36	96	147	221
December, 1927	641	119	191	110	89	38	98	134	210

Source: Department of Commerce, Survey of Current Business, which see for original sources and method of compilation.

Consumption of Paper.

According to the American Paper and Pulp Association, the consumption of paper in the United States in 1926 reached a total of 11,807,000 tons, of which 3,637,000 tons comprised board of all kinds and 3,517,000 tons newsprint. Over half of the newsprint was imported from Canada. From data on production, exports, imports and stocks on hand, it has been calculated that the per capita consumption of paper in the United States in 1926 was slightly over 200 pounds as compared with about 155 pounds in 1923 and 57 pounds in 1900. This increase has been due largely to the growth in the number of uses for paper, board, and paper products, as well as to the larger size of our newspapers and the rapid increase in the quantity of space utilized for advertising purposes.

Newsprint.

Complete monthly and annual data on the production of newsprint paper in the United States and Canada are compiled by the Newsprint Service Bureau. According to their figures, the production of newsprint in the United States in 1926 was nearly 10 per cent greater than in 1925, but in 1927 it showed a decrease of about 11.5 per cent. The Canadian production in 1927, over 85 per cent of which was shipped to the United States, showed an increase of nearly 11 per cent over 1926 and was three times as large as in 1917. Comparative figures on newsprint production and imports are shown in Table 5.

Table 5.—Newsprint: Production in United States and Canada, Total Imports and Exports, and Imports of United States from Canada

[In thousands of short tons]

Calendar year	Domestic production [1]	Total imports	Total exports	Imports from Canada	Canadian production
1913	1,305	220	43	(2)	350
1914	1,313	315	61	(2)	415
1915	1,239	368	55	(2)	489
1916	1,315	468	77	(2)	608
1917	1,359	559	94	(2)	686
1918	1,260	596	97	581	735
1919	1,375	628	110	624	803
1920	1,512	730	46	679	875
1921	1,225	793	17	657	808
1922	1,448	1,029	26	896	1,082
1923	1,485	1,309	16	1,108	1,266
1924	1,481	1,357	17	1,197	1,353
1925	1,530	1,448	23	1,295	1,522
1926	1,678	1,851	19	1,657	1,882
1927	1,486	1,987	12	1,776	2,087

[1] Figures for census years differ slightly from those reported by the Bureau of the Census.
[2] Figures for imports of newsprint paper from Canada, by calendar years, are not available prior to 1918. However, the figures for fiscal years show that 99 per cent of the total imports of newsprint paper into the United States was imported from Canada in each of these years.

Sources: Newsprint Service Bureau; imports and exports from Bureau of Foreign and Domestic Commerce.

Monthly production figures for the United States in Table 6 show, in addition to a marked seasonal variation in output, a noticeable decrease for each month during 1927 as compared with the previous year. Imports, on the other hand, were greater during nearly every month of the year, and the total for 1927 showed an increase of more than 7 per cent over 1926 and 37 per cent over 1925.

Table 6.—Production and Imports of Newsprint, by Months

[In short tons]

Month	Production				Imports			
	1924	1925	1926	1927	1924	1925	1926	1927
Total	**1,481,425**	**1,530,316**	**1,678,669**	**1,485,721**	**1,357,233**	**1,448,425**	**1,850,675**	**1,987,065**
January	131,172	129,442	140,026	135,755	107,594	112,586	126,953	166,102
February	119,744	114,268	129,622	121,318	103,430	110,942	133,219	134,209
March	119,934	127,835	145,910	133,731	121,904	127,918	158,400	166,532
April	129,614	133,098	145,327	130,236	111,944	123,673	168,463	147,635
May	135,910	129,463	141,032	127,395	113,262	123,457	134,870	170,545
June	122,549	128,847	142,166	125,284	116,546	126,407	161,817	161,473
July	115,525	121,550	140,516	118,929	112,173	117,479	153,865	159,687
August	117,075	121,339	139,259	127,129	109,958	102,741	161,063	167,475
September	117,723	121,594	136,167	114,735	107,990	111,188	139,713	168,630
October	130,959	135,662	143,148	114,675	114,121	145,088	172,603	175,484
November	119,315	130,539	140,427	117,222	113,071	124,861	169,549	188,624
December	121,905	136,681	135,069	119,312	125,241	122,085	170,158	180,670

Sources: Production from Newsprint Service Bureau; imports from Bureau of Foreign and Domestic Commerce.

Progress in Simplification.

During 1926 it was recommended that all paper substance weights be stated in the terms of the basic 25 by 40 inch size, but this recommendation has not yet been universally accepted. In connection with the rapidly increasing use of the simplified invoice and bank check, manufacturers have agreed to supply two special types of window envelopes. The envelopes are the same in size, but vary in the location and size of the window. The Post Office Department will incorporate this new "No. 6" envelope in its schedule, effective January 1, 1929. Revisions of several recommendations concerning paper and paper products are under consideration, while new products which are now being given attention include various cartons, and a new recommendation, effective May 1, 1927, established standard sizes for salt packages, including cartons. The bookbinding industry also completed a recommendation for binders' board. Further projects under consideration include one in regard to paper cartons for packing spices and others on waxed paper and paper towels.

PRICE MOVEMENT AND MARKET CONDITIONS

The Bureau of Foreign and Domestic Commerce has compiled a series of index numbers of prices of pulp and paper based on data compiled from trade journals which is a continuation of the series

established by the Federal Trade Commission. Table 7 shows that the price of ground wood pulp, after remaining steady for a year, rose appreciably early in 1926 and maintained its new level until the second quarter of 1927, when it declined sharply. In December, 1927, quotations were reduced further and reached the lowest point in recent years. Domestic bleached sulphite declined in 1926 and throughout 1927; prices reached in December the lowest level since 1919.

Table 7.—Index Prices of Selected Classes of Pulp and Paper

Month	Newsprint	Book paper [1]	No. 1 jute manila	Boards [2]	Ground wood-pulp	Domestic bleached sulphite pulp	General wholesale price index
1913: January	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1920:							
July	271.4	383.6	294.7	369.2	690.5	241.4	241.0
October	301.6	397.3	336.8	353.8	571.4	431.0	211.0
1921:							
January	316.7	287.7	189.5	153.8	333.3	275.9	170.0
July	248.4	209.0	168.4	101.5	128.6	189.7	141.0
1922:							
January	195.8	180.3	178.9	115.4	152.4	155.2	138.0
July	184.4	184.9	178.9	103.8	133.3	137.9	155.0
1923:							
January	195.3	198.6	178.9	192.3	209.5	155.2	156.0
July	197.9	195.2	178.9	176.9	166.6	155.2	151.0
1924:							
January	195.3	195.2	178.9	161.5	190.5	146.6	151.0
July	190.1	196.6	157.9	119.2	131.0	120.7	147.0
December	190.1	184.9	189.5	126.9	131.0	119.0	157.0
1925:							
January	182.3	184.9	189.5	134.6	142.9	129.3	160.0
July	182.3	181.5	191.4	133.8	133.3	129.3	159.9
December	182.3	181.5	189.5	133.8	133.3	137.9	156.2
1926:							
January	169.3	181.5	189.5	133.8	133.3	137.9	156.0
April	169.3	181.5	189.5	142.3	142.9	137.9	151.1
July	169.3	181.5	189.5	126.9	142.9	129.3	150.7
October	169.3	181.5	189.5	134.6	142.9	125.9	149.7
December	169.3	181.5	189.5	126.9	142.9	125.9	147.2
1927:							
January	169.3	181.5	189.5	126.9	142.9	125.9	146.9
April	169.3	174.6	189.5	126.9	128.5	125.9	144.2
July	169.3	172.6	189.5	142.3	128.5	117.2	144.6
October	169.3	172.6	189.5	150.0	128.5	117.2	150.1
December	169.3	172.6	189.5	150.0	123.8	110.3	149.1

[1] Based on average prices of machine-finished and supercalendered book paper.
[2] Based on average prices of newsboard and chipboard.

Sources: Newsprint index was based upon Federal Trade Commission quotations on weighted average contract price standard roll news, f. o. b. mill in carload lots, to and including the second quarter, 1923; all other paper and pulp index numbers compiled from minimum market prices as given in the Paper Trade Journal in its issues nearest the 15th day of the first month of the quarter. Wholesale price index from United States Department of Labor.

At the beginning of 1925 newsprint declined slightly in price as compared with 1924, and in January, 1926, a still further drop in price was noted. This level was maintained consistently through 1926 and up to December, 1927 (see Table 8). Book paper experienced a slight decline in price level early in 1925 and then remained unchanged until the second quarter of 1927, when it again declined and reached its lowest level since 1919. Wrapping paper has remained steady since the middle of 1925. The board market fluctuated in 1926 after a period of steadiness in the latter half of 1925. In the

middle of 1927 it experienced a rapid recovery and held steady during the final quarter of the year at a higher level than since early in 1924.

Total sales of writing paper amounted to about 5 per cent more in 1927 than in 1926, while sales of cover paper were 2½ per cent greater and tissue showed an increased sales volume of approximately 3 per cent.

Table 8.—Newsprint Prices

[Cents per pound]

Year	January	April	July	October	Yearly average
1913	1.92	1.94	2.01	1.99	1.96
1919	3.68	3.64	3.63	3.84	3.74
1920	4.36	4.73	5.21	5.79	5.10
1921	6.08	5.41	4.77	4.19	5.02
1922	3.76	3.57	3.54	3.61	3.62
1923	3.75	3.83	3.80	3.75	3.78
1924	3.75	3.75	3.65	3.65	3.70
1925	3.50	3.50	3.50	3.50	3.50
1926	3.25	3.25	3.25	3.25	3.25
1927	3.25	3.25	3.25	3.25	3.25

Sources: Federal Trade Commission to and including April, 1923; thereafter minimum quotations published in the issue of the Paper Trade Journal nearest the 15th of each month.

A normal increase in paper consumption was noted during 1927, although consumption in several lines did not keep pace with increased production. This was reflected to some extent in slightly weakened market quotations during the year.

The year was marked by practically a total absence of change in the labor situation, wage rates remaining at about 132 per cent above the pre-war rate and employment showing only a negligible change.

FOREIGN TRADE

Imports.

Total imports of pulpwood, pulp, and paper products in 1927 were valued at $276,158,000, an increase of less than 1 per cent as compared with 1926.

Total imports of paper base stocks in 1926 amounted to nearly $122,000,000 in value but declined in 1927 to less than $114,000,000. Of the 1927 value over 75 per cent represents wood pulp, mechanical and chemical; nearly 15 per cent is pulpwood, and the remainder rags and other stocks. Imports of pulpwood show a gain of approximately 16 per cent in value over 1926, as shown in Table 9.

Imports of paper, except printed matter, in 1927 aggregated $149,365,000, a gain of nearly 8 per cent over 1926. By far the largest part of this increase was in the form of newsprint. Other material gains were shown in cigarette and tissue paper, and practically all other items registered slight increases in value.

Table 9.—Exports and Imports of Pulpwood, Wood Pulp, Paper, Paper Manufactures, and Printed Matter

NOTE.—Figures for quantity are in short tons for all items except exports of wall board, shown in thousands of square feet, and imports of pulpwood, shown in cords.

Item	Quantity (short tons)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
EXPORTS								
Total pulpwood, pulp, and paper products					47,242	50,664	53,726	56,562
Paper base stocks, total					4,249	5,783	4,964	5,412
Wood pulp	32,098	37,995	34,220	32,004	2,042	2,441	2,084	1,534
Pulpwood, rags, and other paper stock					2,207	3,342	2,879	3,878
Paper, except printed matter, total					23,065	23,844	26,830	26,976
Newsprint	17,159	22,738	19,258	12,329	1,773	2,025	1,849	1,191
Book paper, including surface coated	10,970	10,575	11,994	11,007	2,585	2,496	2,467	2,139
Wrapping paper	12,529	14,368	16,508	16,156	2,041	2,173	2,234	2,256
Writing, envelopes, and cover paper	4,040	4,134	7,677	9,047	1,500	1,606	2,628	2,810
Tissue, toilet, and crêpe paper	3,663	4,393	4,836	5,211	1,299	1,563	1,728	1,760
Bristol board and strawboard	36,010	16,754	20,920	20,200	2,877	1,711	2,203	2,253
Wall board of paper or pulp (sq. ft.)	17,490	14,097	25,476	45,891	579	475	879	1,506
Box board		11,241	26,234	21,817		796	1,502	1,351
Bags, boxes, and cartons	12,028	14,988	15,700	17,454	2,139	2,435	2,459	2,599
Vulcanized fiber, sheets, strips, rods, and tubes	2,066	2,790	2,677	2,143	1,315	1,664	1,590	1,264
All other					6,957	6,900	7,291	7,845
Books and other printed matter, including playing cards					19,928	21,037	21,934	24,174
IMPORTS								
Total pulpwood, pulp, and paper products					235,048	251,374	275,412	276,158
Paper base stocks, total					107,314	118,795	121,506	113,632
Pulpwood (cords)	1,279,975	1,483,231	1,383,619	1,596,797	13,108	15,130	14,176	16,484
Wood and other pulp	1,525,097	1,665,992	1,735,732	1,679,518	75,868	81,986	91,487	86,086
Rags and other paper stock	356,030	386,251	334,561	280,940	18,338	21,679	15,842	11,061
Paper, except printed matter, total					117,673	119,201	139,499	149,365
Standard newsprint	1,357,233	1,448,425	1,850,675	1,987,065	101,297	103,717	123,982	131,489
All other printing paper	13,355	8,305	8,188	5,210	1,126	809	827	512
Wrapping paper	24,825	9,985	7,212	7,556	1,931	875	758	855
Pulpboard and other paper board	54,360	51,526	55,493	[1] 30,064	2,861	2,659	2,634	2,250
Cigarette paper	5,490	5,326	4,138	7,343	3,028	2,935	2,183	4,292
Tissue paper	1,202	1,357	1,441	1,616	986	1,164	1,405	1,836
Paper boxes	915	1,165	1,052	1,252	1,179	1,350	965	1,447
All other					5,264	6,692	6,747	6,685
Books and other printed matter					10,061	13,378	14,407	13,159

[1] Figure represents pulpboard only; quantity for "Other paper board," not reported for 1927.

Source: Bureau of Foreign and Domestic Commerce.

Exports.

Total exports of pulp and paper products in 1927 were valued at $56,562,000, an increase of nearly 6 per cent over 1926 and about 11 per cent over 1925. Of this sum over 47 per cent was paper, excepting printed matter, about 10 per cent was base stocks, and the remainder books and other printed matter. For the last item alone exports amounted to $24,174,000, an increase of over 10 per cent as

compared with 1926. Material increases were shown in our exports of writing paper and envelopes, bags, boxes and cartons, board, and wrapping paper, while newsprint and book paper showed marked decreases. Comparative data covering the last four years are shown in Table 9.

Activity of Principal Foreign Countries.

The most important pulp and paper producing countries outside the United States are Canada, Finland, Germany, Norway, and Sweden. Of these Canada's production is by far the largest, but most of the total is newsprint, the greater part of which is exported to the United States. Canadian newsprint imported in 1927 amounted to 1,776,000 tons, or over 7 per cent more than in 1926. (Table 5.) Imports of newsprint from Finland, Germany, and Newfoundland showed marked decreases in 1927 as compared with 1926, while imports from both Norway and Sweden were considerably larger.

During 1927 conditions have been fairly stable in Germany and the north European countries with the exception of Sweden, where labor difficulties became evident late in the year and culminated in a lockout in the pulp mills in January, 1928, which extended to the paper mills in March. As a consequence, the latter part of 1927 showed an increased firmness in price generally in the pulp market. Competition has, however, continued keen and sales agreements among pulp producers embracing several European countries have been completed.

PRINTING AND PUBLISHING

Position and Character.

The main census designations of the printing and publishing industry are (1) newspapers and periodicals; (2) book, pamphlet, and job printing; and (3) music printing and publishing. The first two are often combined in a single establishment. It may be noted that in many instances publishing houses have no printing facilities, while many printing firms do no actual publishing and some do both. For the purpose of this presentation the music group is combined with book and job printing.

Data for 1926 (which is not a census year) and for 1927 are not available, but in 1925 the three branches combined employed over 251,000 wage earners as against about 246,000 in 1923. The value added by manufacture to the raw materials used in 1925 was approximately $1,660,000,000, or 15 per cent in excess of 1923. Of this amount newspaper and periodical printing and publishing accounts for $1,068,000,000. A tabulated summary of the latest available census data is shown in Table 10.

Table 10.—Printing and Publishing and Related Industries

Branch of industry and year	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				Thousands of dollars			
Newspapers and periodicals:							
1899	15,305	94,604	70,089	50,333	50,215	222,984	172,769
1914	19,317	114,375	181,763	88,561	129,082	495,906	366,824
1919	17,362	120,381	194,074	144,348	300,385	924,153	623,768
1921 [1]	10,453	107,534	[2]	174,359	371,124	1,123,710	752,586
1923 [1]	10,267	115,646	203,454	196,804	363,480	1,268,502	905,022
1925 [1]	10,625	117,001	237,662	217,541	379,541	1,447,661	1,068,121
Book and job, including music:							
1899	7,006	68,388	37,285	33,917	36,642	124,070	87,428
1914	12,295	113,994	113,804	78,987	97,500	314,602	217,102
1919	13,249	123,904	132,110	142,403	213,191	612,255	399,064
1921 [1]	9,865	121,955	[2]	182,312	218,155	704,100	485,945
1923 [1]	10,185	130,809	153,594	202,583	222,456	752,854	530,398
1925 [1]	10,431	134,271	170,646	221,292	230,518	821,977	591,459
RELATED INDUSTRIES, 1925 [1]							
Bookbinding and blank-book making	970	20,836	16,147	26,006	24,127	81,600	57,473
Engraving, steel and copperplate, and plate printing	368	7,259	5,764	10,169	7,628	32,106	24,478
Lithographing	331	16,957	28,623	27,107	32,171	98,721	66,550
Engraving (other than steel, copperplate, or wood), chasing, etching, and diesinking	188	1,827	1,753	2,691	2,177	8,623	6,446
Engraving, wood	22	117	32	234	46	525	479
Photo-engraving, not done in printing establishments	577	9,868	6,735	24,321	8,393	58,640	50,248
Stereotyping and electrotyping, not done in printing establishments	193	4,283	13,774	9,207	4,280	22,361	18,081
Printing materials, not including type or printing ink	71	888	1,981	1,379	1,787	6,525	4,739
Type founding	18	537	1,236	603	705	2,451	1,745
Engravers' materials	16	177	921	276	1,202	2,014	812
Wall paper	49	5,069	11,528	5,863	14,999	30,069	15,070

[1] Figures do not include data for establishments reporting products under $5,000 in value.
[2] Not called for in schedule for 1921.
Source: Bureau of the Census.

Production.

An increase of about 3 per cent in the number of establishments was noted in 1925 as compared with 1923, and at the same time the primary horsepower utilized increased by about 15 per cent. In the newspaper and periodical class the total value of the products increased 14 per cent in 1925 as compared with 1923, while the value of advertising alone increased over 16 per cent, as shown in Table 11. Actual consumption of newsprint paper in the United States in 1927, based on production, import, and export data published by the News Print Service Bureau and the Bureau of Foreign and Domestic Commerce, was 3,450,000 tons, a decrease of 1.7 per cent as compared with 1926.

Table 11.—Products of the Newspaper and Periodical Branch, by Class

[In thousands of dollars]

Class	1914	1919	1921	1923	1925	Per cent increase or decrease (−)	
						1914–1925	1923–1925
Total value	**495,906**	**924,153**	**1,123,710**	**1,268,502**	**1,447,661**	**191.9**	**14.1**
Newspapers and periodicals	418,849	806,306	1,005,270	1,154,228	1,321,381	215.5	14.5
Advertising	255,421	528,299	676,987	793,729	923,249	261.5	16.3
Subscriptions and sales	163,428	278,006	328,284	360,498	398,132	143.6	10.4
Books and pamphlets and job printing	67,599	107,949	112,407	113,059	125,907	86.3	−11.4
Books and pamphlets	20,357	34,199	27,418	33,490	33,028	62.2	−1.4
Sheet music and books of music	638	1,116	161	69	131	−79.5	89.9
Job printing (generally), etc.[1]	46,603	72,634	84,828	79,500	92,748	99.0	16.7
All other products	9,458	9,898	6,033	1,215	373	−96.1	−69.3

[1] Includes "ready prints" (patent insides and outsides), machine composition for others, bookbinding, electrotyping, engraving, lithographing, etc.

Source: Bureau of the Census.

No data are yet available for 1927 concerning changes in the total number of periodicals published, but, as is indicated in Table 12, there was a marked increase in 1925 as compared with 1923. This was entirely in the field of weekly and monthly journals; the number of all others, including daily newspapers, showed a decrease. There was an increase noted in circulation in each class except those published triweekly and semiweekly.

Table 12.—Newspapers and Periodicals, by Class, Number, and Circulation

Class	Number of periodicals					Aggregate circulation per issue (thousands)				
	1914	1919	1921	1923	1925	1914	1919	1921	1923	1925
All classes	**22,754**	**20,489**	**13,167**	**13,077**	**14,065**					
Daily, except Sunday	2,580	2,441	[1] 2,343	[1] 2,314	[1] 2,280	28,777	33,029	[1] 32,342	[1] 35,733	[1] 38,040
Sunday	571	604	538	602	597	16,480	19,369	20,853	24,512	25,630
Triweekly	84	93	85	79	74	549	492	524	432	401
Semiweekly	583	452	423	407	383	2,484	2,020	1,540	2,025	1,934
Weekly	15,172	13,375	7,054	6,887	7,568	50,337	51,902	43,521	47,861	50,815
Monthly	2,822	2,647	1,907	1,907	2,271	79,191	91,682	83,459	91,654	111,876
Quarterly	500	489	515	555	553	18,854	18,921	21,745	22,198	22,840
All other classes	442	388	302	326	339	8,923	5,068	6,962	7,629	8,450

[1] Includes for 1925, 164 daily publications other than newspapers, with an aggregate circulation of 633,067; for 1923, 43 daily publications other than newspapers, with an aggregate circulation of 262,037; and for 1921, 9 daily publications other than newspapers, with an aggregate circulation of 36,085 per issue.

Source: Bureau of the Census.

From 1921 to 1926 there was a consistent growth in both newspaper and magazine advertising which reflected the general expansion of business activity in the United States. In 1927, however, there was a decrease of over 4 per cent in the total as compared with 1926, the highest annual period ever recorded. (Table 13.) This

decline was confined entirely to newspaper advertising, as advertising in periodicals increased by slightly less than 1 per cent.

Table 13.—Advertising Statistics

Year	Thousands of agate lines		Year	Thousands of agate lines	
	Magazine [1]	Newspaper [2]		Magazine [1]	Newspaper [2]
1913	14,688		1921	17,760	1,039,932
1914	13,932		1922	18,876	1,093,572
1915	13,764		1923	23,436	1,168,824
1916	16,980	737,280	1924	24,408	1,157,628
1917	17,880	752,052	1925	25,128	1,222,992
1918	16,128	732,804	1926	27,264	1,271,868
1919	22,680	1,006,308	1927	27,468	1,218,612
1920	27,660	1,149,984			

[1] These figures represent the number of lines of advertising carried by the 60 leading magazines as compiled by Printer's Ink.
[2] Compiled by the New York Evening Post from 22 identical cities. For the years 1916 to 1918 the totals were partially estimated.

Foreign Trade.

Imports of printed matter underwent a considerable increase from 1924 to 1926, but imports in 1927, amounting in value to $13,159,000, showed a decrease of over 8.5 per cent as compared with 1926. (Table 9.)

Exports of printed matter from the United States have increased steadily since 1924, and their total value for 1927 amounted to $24,174,000, as compared with $21,934,000 in 1926, an increase of over 10 per cent. Our exports of printed matter in 1927 reached a total value of only about 10 per cent less than our exports of all other paper products, while our imports of printed matter now amount to considerably less than one-tenth of our total imports of paper and paper products.

Progress in Simplification.

During 1927 the standardization of warehouse forms which was completed in 1926 was considered for resurveys to determine the extent of adherence to the original standards established, and preliminary action was taken in regard to a simplification of the sizes and forms of tags. Printer's type has been suggested as a subject for simplification, but this item was still under consideration at the end of 1927. A schedule covering blank books was completed in 1927 and, with the number of leaves as a basis, the sizes were reduced from 86 to 41.

CHEMICALS AND RELATED PRODUCTS

PRODUCTION

Census Statistics.

The term "chemical and related industries" includes a multitude of primary and elaborative activities. More than 20 of the industries distinguished by the Bureau of the Census may be considered as falling directly within this field, and many of these make numerous products. Many industries outside this group proper use chemical processes to a large extent or produce chemicals as by-products. Among these are the rubber, paper, oil-refining, metallurgical, and ceramic industries, discussed elsewhere in this volume. Still other industries are quite dependent upon the products of the chemical industry; this is notably true of the textile industries and of agriculture.

Prior to 1914 the more technical and highly processed branches of chemical manufacture were comparatively unimportant in the United States. Up to that time American manufacturers had confined their efforts to the achievement of a basic chemical industry, including naval stores, phosphate rock, fertilizers, sulphur, heavy chemicals, alkalies and acids, metallurgical by-products, metallic earths, paints, and varnishes. The United States was largely dependent on imports of many chemical products—especially highly processed chemicals, coal-tar dyes and other synthetic commodities, and toilet preparations. Although imports are even larger than in 1914, the bulk of the import trade is now composed of raw and semimanufactured materials for use by the chemical industry.

During the period of the World War supplies from foreign countries were limited for some commodities and entirely cut off for others, and American chemists and manufacturers turned their attention to the manufacture of these essential commodities. With the basic branches already firmly established, they were enabled to increase their production tremendously and to keep pace with demand. After the close of the war and the succeeding period of general depression there was a rather rapid recovery of the chemical industry in 1923. From 1923 to 1925 there was a great expansion, with many notable changes not only in the substitution of some commodities for others but also in the methods of manufacture. Each year synthetic commodities are being used in larger amounts, either because of price, availability, or better adaptability.

The principal statistics for the chemical and related industries as a group are shown for the last five censuses in Table 1. The value of

products for the group in 1925 was $2,852,000,000 (a figure involving some duplication, owing to the use of products of one establishment as materials for another). This was about 8 per cent greater than the value for 1923 and about two and two-thirds times the figure for 1914. The increase as compared with the pre-war year is partly a result of higher prices, but the price advance has been decidedly less conspicuous in the chemical industries than in most others. The average index of prices for the chemical group, as classified by the Department of Labor, was in 1925 only 34 per cent above the 1913 level, as compared with 59 per cent for all commodities.

Table 1.—The Chemical and Related Industries [1]

Year and industry	Establishments	Wage earners (average number)	Primary horsepower	Wages	Cost of materials	Value of products	Value added by manufacture
				In thousands of dollars			
THE GROUP AS A WHOLE							
1914	9,848	187,722	733,924	98,597	637,421	1,074,035	436,614
1919	9,934	269,335	1,047,846	288,477	1,623,018	2,751,316	1,128,298
1921	7,582	199,363	[2]	210,013	1,122,646	1,960,351	837,705
1923	7,707	254,779	1,397,009	282,350	1,465,385	2,648,987	1,183,602
1925	7,597	247,173	1,477,676	288,842	1,533,847	2,852,414	1,318,567
1925							
Baking powders and yeasts	49	2,931	36,633	4,063	23,376	74,593	51,217
Blacking, stains, and dressings	171	1,869	2,659	2,165	9,733	25,055	15,322
Bluing	23	176	366	185	1,017	2,167	1,150
Bone black, carbon black, and lampblack	66	1,505	7,289	1,722	5,655	14,565	8,910
Candles	20	626	922	673	2,786	5,114	2,328
Chemicals, not elsewhere specified	715	55,694	657,867	80,435	271,646	547,003	275,357
Cleaning and polishing preparations	299	2,161	6,279	2,660	12,707	34,020	21,313
Drugs, pharmaceutical and toilet preparations	2,265	33,823	58,163	35,917	172,708	480,940	308,232
Dyestuffs and tanning materials	125	2,495	32,634	2,987	22,763	34,784	12,021
Explosives	103	5,697	37,808	7,731	37,877	69,669	31,792
Fertilizers	587	19,644	152,193	17,743	137,808	206,773	68,965
Glue, not elsewhere specified	55	3,325	22,807	3,976	15,338	25,764	10,426
Greases	316	5,910	34,707	8,328	40,509	64,681	24,172
Ink:							
Printing	109	2,150	17,041	3,346	16,253	34,753	18,500
Writing	28	524	700	596	2,424	6,084	3,660
Oils	238	6,485	45,022	9,534	211,327	264,172	52,845
Paints and varnishes	923	25,490	143,111	35,420	293,943	470,736	176,793
Salt	70	6,308	54,647	7,261	13,849	34,253	20,404
Soap	272	15,406	56,697	18,526	184,873	278,273	93,400
Sulphuric, nitric, and mixed acids	36	2,196	22,120	3,103	11,066	23,307	12,241
Turpentine and rosin [3]	1,007	29,413	3,138	15,190	11,887	42,364	30,477
Wood distillation	106	4,217	17,907	4,305	15,824	25,283	9,459
Rayon [4]	14	19,128	66,966	22,976	18,478	88,061	69,583

[1] The following industries, which are included in the census classification as allied chemical industries, are not included in this table: Ammunition, coke, fireworks, gas, cottonseed oil and cake, petroleum refining, mucilage, and liquors (malt, vinous, and distilled); but the turpentine and rosin industry, which is not included in the census classification, is here included.

[2] Not called for in schedule for 1921.

[3] Crop year ended Mar. 31.

[4] Made a separate industry in 1925. Included in "Chemicals not elsewhere classified" for 1923 and prior years.

Source: Bureau of the Census.

Table 2 shows comparative statistics for three censuses for 10 of the principal industries of the group. Each establishment is assigned to a given industry according to its principal product, although it may also incidentally make products other than those indicated by the industry designation. Turpentine and rosin, paints and varnishes, and drugs, pharmaceutical, and toilet preparations showed particularly large increases in value of output in 1925 as compared with 1923, amounting to 20 per cent, 16 per cent, and 13 per cent, respectively.

Table 2.—Comparative Statistics for Major Chemical and Related Industries

NOTE.—Figures do not include by-products of other establishments.

[Values in thousands of dollars]

Industry	Number of wage earners			Value of products			Value added by manufacture		
	1914	1923	1925	1914	1923	1925	1914	1923	1925
Bone black, carbon black, and lampblack	339	1,303	1,505	1,464	14,600	14,565	778	9,305	8,910
Chemicals	[1] 32,311	[1] 74,897	55,694	[1] 158,054	[1] 630,870	547,003	[1] 68,603	[1] 313,969	275,357
Drugs, pharmaceutical and toilet preparations	26,561	34,830	33,823	175,452	427,440	480,940	103,897	261,083	308,232
Explosives	6,306	6,388	5,697	41,433	75,029	69,669	15,806	35,533	31,792
Fertilizers	22,815	18,572	19,644	153,196	183,089	206,773	45,241	55,109	68,965
Paints and varnishes	16,083	22,818	25,490	145,624	404,135	470,736	57,159	155,180	176,793
Soap	14,172	17,002	15,406	127,942	276,403	278,273	39,075	102,857	93,400
Sulphuric, nitric, and mixed acids	3,064	2,357	2,196	15,215	24,405	23,307	8,481	12,710	12,241
Turpentine and rosin [2]	34,817	34,328	29,413	20,990	35,167	42,364	15,454	26,194	30,477
Wood distillation	3,010	4,123	4,217	10,284	29,695	25,283	3,555	12,426	9,459

[1] Includes rayon.
[2] Figures for 1923 and 1925 are for crop years ended Mar. 31, following years specified.
Source: Bureau of the Census.

The total values of the major groups of chemicals and related commodities manufactured by all concerns, regardless of the industry in which the individual concern may be classified, are shown in Table 3. Products not made for sale but for further transformation in the same establishment are not included. Some items, such as linseed oil, glue, and cleansing and polishing preparations, have been omitted because figures for different censuses are not comparable. The increases in 1925 as compared with 1914 in several of the groups represent the phenomenal growth of industries which received their impetus during the war.

The development of the plastics industry illustrates the possibilities offered to substitute products. Some of the reductions in sales of chemicals in 1925 from 1923 are indicative of a growing tendency on the part of manufacturers to package and sell their goods under proprietary names, whereas formerly they sold in bulk. The sale of insecticides, an important branch, is regulated by demand of agriculturists and varies from year to year. The setback in the wood-

distillation industry is due to the increasing use of synthetic methanol. The value of the gases manufactured in 1925 was more than five times that of 1914, showing with what rapidity a large industry can be developed after new processes have once been evolved, production put on a commercial basis, and consumption assured. The more highly processed chemicals such as druggists' preparations, medicinal and pharmaceutical preparations, prepared medicines, essential oils, and perfumery and toilet preparations, all recorded large increases over both 1923 and 1914. Undoubtedly the general increase in the use of perfumes and toilet preparations is responsible for the expansion of this particular industry to more than five and one-half times its 1914 figure. The paint and varnish industry has trebled the value of its output.

Table 3.—Value of Output of Chemicals and Certain Related Products

NOTE.—Figures include products of establishments making primarily the articles specified and also those made as by-products by other establishments. They cover only products made for sale as such.

[In thousands of dollars]

Item	1914	1923	1925	Item	1914	1923	1925
CHEMICALS				RELATED PRODUCTS			
Acids	32,837	79,006	80,151	Druggists' preparations	49,376	78,577	80,921
Nitrogenous and fixed-nitrogen compounds	9,870	30,436	29,659	Proprietary medicines and compounds	99,970	230,277	247,294
Sodium compounds	32,626	111,848	109,522	Perfumery and cosmetics	25,965	119,237	147,393
Potash and potassium compounds	7,906	6,319	6,071	Essential oils	2,565	3,394	[3] 5,882
Alums, aluminum, and compounds	[1]	11,067	11,581	Natural dyestuffs and tanning extracts	21,383	38,866	36,278
Bleaching compounds	5,302	16,729	17,165	Explosives	41,433	75,394	[3] 69,669
Coal-tar products	13,492	121,893	112,201	Fertilizers	169,018	192,968	214,809
Plastics	[2] 13,896	43,178	48,732	Wood distillation	10,932	29,780	25,313
Compressed and liquefied gases	10,415	53,384	55,533	Paints and varnishes	149,173	440,565	511,766
Organic and inorganic chemicals, not elsewhere specified	52,898	202,596	205,539	Bone, carbon, and lamp blacks	2,972	16,760	17,189
				Turpentine and rosin	21,313	[4] 38,549	[4] 47,822

[1] No comparable data.
[2] Includes rayon.
[3] By-products of other industries not included.
[4] Crop year ending Mar. 31, following year specified.
Source: Bureau of the Census.

Production of Selected Chemicals.

Owing to the importance of a few commodities and industries of the chemical group, current production statistics are gathered for them; but in no instance, with the exception of certain data published by the Tariff Commission, are the statistics complete. These are summarized below for 1927.

Coal-tar products.—The Tariff Commission issues annually a report on coal-tar products and other synthetic organic chemicals. (Table 4.) The coal-tar products are divided into three groups—crudes, intermediates, and finished products. Inasmuch as the crudes and intermediates are used largely as the basis for finished products, the total value for the entire group involves some duplication. The

production of crude coal tar is far in excess of the needs of the domestic coal tar products industry. Out of 583,000,000 gallons produced in 1926, an increase of 9 per cent over 1925, 248,000,000 gallons were distilled, the remainder being used for fuel. Only a part of this amount was completely refined because of the large demand for the partly refined products—motor fuel, solvents, and pitches. Although larger amounts of creosote oil are made each year the production is still insufficient, and the output of 75,496,000 gallons in 1926 was 12,000,000 gallons less than imports.

The total output of intermediates in 1927 was about 240,000,000 pounds, an increase of 5 per cent over 1926. Domestic production of dyes amounted to 95,000,000 pounds in 1927, the largest total for any year in the history of the American dye industry.

One of the most interesting changes in the chemical industry was the notable progress made in the production of synthetic resins. The development of synthetic resins is distinctly an American achievement, and production in 1927 reached over 13,000,000 pounds. A new class of resins has been produced from glycerin and phthalic anhydride, which gives promise of an even greater production.

Table 4.—Production and Sales of Coal-Tar Chemicals

[Quantities in thousands of pounds; values in thousands of dollars]

Year	Intermediates	Finished products							
		Total	Dyes	Color lakes	Photographic chemicals	Medicinals	Flavors	Perfumes	Tanning materials and resins
Production (quantity):									
1923	231,394	122,950	93,668	13,079	343	3,273	1,458	1,365	9,764
1924	186,597	97,730	68,679	9,343	316	2,968	1,751	1,895	12,778
1925	210,700	120,554	86,345	11,415	327	3,238	2,207	2,335	14,687
1926	229,549	122,694	87,991	11,796	393	3,679	2,858	1,870	14,107
1927	240,073	133,192	95,168	11,602	[1] 5,167	3,599	2,205	1,999	[2] 13,452
Sales (quantity):									
1923	83,583	115,298	86,568	12,627	321	2,995	1,442	1,276	10,069
1924	76,898	93,636	64,961	9,282	322	2,688	1,692	1,946	12,745
1925	86,067	112,672	79,303	11,308	349	3,295	2,149	2,371	13,897
1926	86,895	120,287	86,268	11,425	387	3,575	2,629	1,678	14,325
1927	92,908	136,039	98,339	11,621	[1] 5,185	3,549	2,236	2,026	[2] 13,084
Sales (value):									
1923	18,916	65,898	47,223	5,125	444	4,720	1,780	789	5,817
1924	18,164	55,933	35,013	4,046	461	5,178	1,471	946	8,818
1925	19,756	60,811	37,468	5,544	475	6,332	1,409	884	8,699
1926	18,976	59,406	36,312	6,023	505	6,687	1,482	750	7,647
1927	20,133	61,006	38,533	6,447	[1] 685	6,819	1,435	992	[2] 6,095

[1] Data include tanning materials, which can not be shown separately in 1927, and which were reported with resins in prior years.
[2] Synthetic phenolic resins only.
Source: United States Tariff Commission.

Insecticides and fungicides.—For the past five years the Bureau of the Census has been obtaining special reports of the production of arsenical insecticides. Based on the returns collected at previous

censuses, it is roughly estimated that the 19 reporting companies represent not less than two-thirds of the total production of insecticides. During the year ended June 30, 1927, production of these companies was considerably in excess of that for the preceding year and amounted to 18,716,000 pounds of calcium arsenate, 18,728,000 pounds of lead arsenate, and 5,743,000 pounds of Paris green.

Wood chemicals.—During 1927 there was no great change in the wood chemical industry, production of crude methanol being 7,820,000 gallons and acetate of lime 156,667,000 pounds.

Paints and varnishes.—According to the special semiannual paint and varnish censuses by the Bureau of the Census, the year 1927 showed continued progress in the manufacture of varnishes, japans, and lacquers, with a total output of 99,055,000 gallons, and of ready-mixed and semipaste paints, which reached a total of 97,319,000 gallons. Production of paste paints, which has shown a rather steady decline since 1924, amounted to 406,337,000 pounds in 1927.

Progress in simplification.—Through the cooperative action of the chemical industry and the Division of Simplified Practice of the Department of Commerce, a simplification project was promulgated during 1927 which recommended a reduction in the number of types of metallic cartridges from 348 to 256. A survey of the adherence to the two recommendations which had previously been promulgated by the industry showed 81 per cent adherence for the recommendation covering loaded shells and 97 per cent adherence to the insecticide and fungicide project.

MARKET CONDITIONS AND PRICE MOVEMENTS

The complexity of the chemical field is such that any general statement regarding price movements is subject to many outstanding exceptions. None of the various group indexes is completely representative of the class under review. The most comprehensive index is that of the Department of Labor. This (1913 prices taken as 100) averaged 122 in 1927, an increase over pre-war years much less than that for commodities in general, and a 7 per cent decrease from 1926. The price index of essential oils, which started to decline during the first quarter of 1926, continued falling throughout that year and the first six months of 1927, rose somewhat during the third quarter, and then again declined in the latter part of the year. The average for the year was 39 points lower than in 1926.

The dye industry is always before the public eye because of its paramount position as a key industry. All leading world powers appreciate the significance of establishing, maintaining, and protecting a well-organized coal-tar chemical industry because of the immediate adaptability of equipment and technique to the production of war munitions and supplies for purposes of national defense.

It is interesting, therefore, to note that the weighted average price of all domestic coal-tar dyes sold in 1927 was 7 per cent less than the average in 1926 and that a steady decline has been registered from $1.26 per pound in 1917 to $0.39 per pound in 1927.

Prices of numerous chemicals are still subject to pressure from European competition caused by the determination of European producers to regain former markets and by the development of synthetic substitutes. Vigorous competition in all chemical markets of the world has had its reflection in this country.

Table 5.—Price Indexes of Representative Chemicals

Monthly and quarterly average	Chemicals and drugs [1]	Drugs and pharmaceuticals [1]	Essential oils [2]	Crude drugs [2]	Sulphuric acid, 66° [1]	All commodities, wholesale [1]
1913	100				100	100
1914	101	100	100	100	100	98
1919	169	201	213	185	100	206
1920	200	196	265	202	112	226
1921	136	129	158	134	91	147
1922	124	120	131	174	76	149
1923	131	142	135	220	73	154
1924	130	155	140	208	71	150
1925	134	157	174	198	70	159
1926	131	156	170	205	73	151
1927	122	158	131	202	75	147
1926						
January-March	132	156	204	196	70	154
April-June	131	156	174	204	73	152
July-September	131	155	162	207	75	150
October-December	129	156	142	210	75	148
1927						
January-March	122	155	126	204	75	146
April-June	122	156	122	204	75	144
July-September	121	156	149	197	75	147
October-December	122	166	126	205	76	150

[1] Bureau of Labor Statistics, Department of Labor.
[2] Oil, Paint, and Drug Reporter.

FOREIGN TRADE

The foreign trade in chemicals and related products was favorable; exports in 1927 again exceeded all records and imports were also high. These products as here defined include not only the whole of Group 8, "Chemicals and allied products," in the general foreign-trade statistics, but also certain oils, gums, drugs, etc., from Group 2, and a few other less important products. However, they do not cover so many branches and commodities as given in the production tables. Total exports were valued at $192,541,000, an increase of 5 per cent over 1926, and imports at $206,234,000, a decrease of 2 per cent. Exports were 152 per cent and imports 79 per cent greater than before the war. These gains in both cases represent more increase in quantity than in price. Both are the result of the development of the domestic chemical industry, the increase in imports being due chiefly to the purchase by American factories of larger quantities of raw and partly finished materials not indigenous to this country.

As in previous years, approximately one-half of the total value of exports of chemicals and related products went to five countries, the United Kingdom leading with 15 per cent, closely followed by Canada with 14 per cent, and Germany with 10 per cent, while Japan and Cuba each took 5 per cent. The outstanding changes in countries of destination were the falling off in the exports to the United Kingdom, Cuba, and Japan, and the greatly increased sales to Germany, France, the Netherlands, and Italy. The distribution of exports by geographic regions was: 40 per cent to Europe, 26 per cent to North America, 12 per cent to South America, 20 per cent to the Far East, and 2 per cent to Africa.

Highly processed products are relatively the more important among chemical exports, and crude products among the imports. For the most part, exports of the crude commodities show comparatively little increase over pre-war figures and some show a decrease, while the exports of the more advanced products show marked gains in nearly all cases. Sodium nitrate alone accounts for one-seventh of the total imports in 1927, potash fertilizers for 7 per cent, shellac for 5 per cent, and Chinese wood oil for 6 per cent. There is somewhat less concentration in the case of exports; the largest single item, rosin, represents about 12 per cent of the total, turpentine 5 per cent, and sulphur 9 per cent. The geographic distribution of the exports of most of the individual commodities of this group is wide. In the case of most of the imports, however, a single country or a very few countries furnish us with a large part of the total, inasmuch as the products are peculiarly characteristic of the country or countries of origin and not widely distributed throughout the world.

Exports by Classes.

Coal-tar products.—Exportation of coal-tar chemicals is almost wholly a war and postwar development. Shipments abroad in 1927 were one-fifth greater in value than in 1926. The improvement occurred in exports of crudes during the first part of the year as an indirect result of the British coal stoppage. During 1927, 1,000,000 pounds more of colors, dyes, and stains were shipped abroad than in 1926, although values fell nearly half a million dollars. Competition, particularly in the markets of the Far East, has resulted in a decline in prices of the main divisions, such as synthetic indigo, sulphur colors, and aniline dyes. As in other years, the Far East continued to be the main outlet for colors, dyes, and stains, the leading export commodities of the finished coal-tar products group.

Medicinal and pharmaceutical preparations.—Although the exports of medicinal and pharmaceutical preparations were but 2 per cent above the 1926 figure, there were two noteworthy changes, the continued decline in quinine sulphate and the much larger sales of anti-

toxins, serums, and vaccines. Since pre-war years there has been a growing recognition of the quality of American medicinals, and exports were treble the pre-war average. Each year foreign sales of antitoxins, serums, and vaccines have increased and the distribution spread to new countries. Argentina was the best customer in 1927, having doubled its purchases from 1926, while Cuba, Canada, and Mexico were other large buyers. The item "All other" makes up the greater part of the total for medicinal and pharmaceutical preparations and consists chiefly of proprietary articles. These are sent to practically every country of the world, although England again stood out as the principal buyer, having purchased 17 per cent of the total. Cuba, Colombia, British India, Canada, and Mexico are other large consumers. Shipments to the Far East and Africa recorded increases.

Table 6.—Exports and Imports of Chemicals and Related Products, by Groups

[In thousands of dollars]

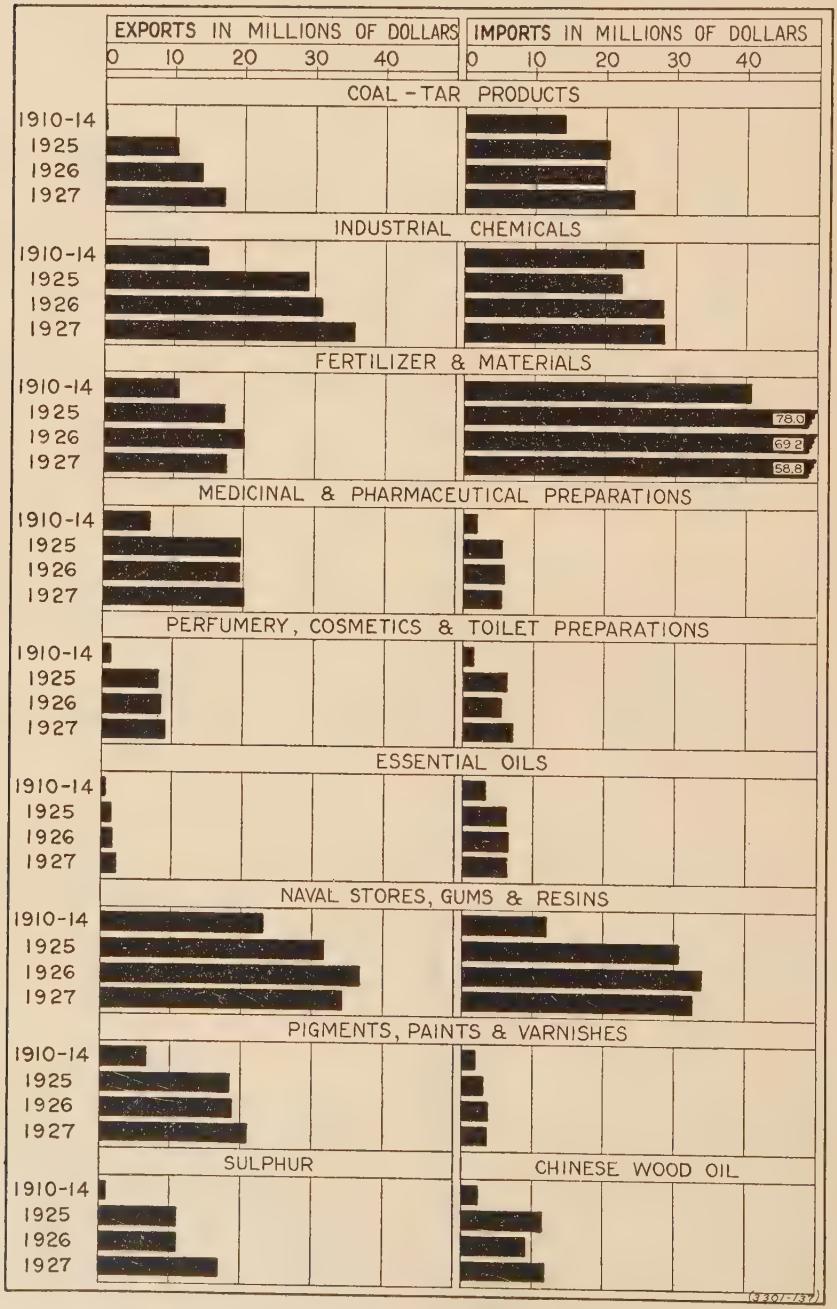
Group	Exports				Imports			
	1910–1914	1925	1926	1927	1910–1914	1925	1926	1927
Grand total	**76,436**	**169,781**	**183,315**	**192,541**	**115,242**	**207,625**	**210,414**	**206,234**
Chemical group (8)	**46,632**	**116,345**	**124,856**	**131,828**	**87,657**	**138,340**	**134,766**	**129,643**
Coal-tar products	103	10,761	14,093	17,097	14,275	20,657	19,806	23,987
Medicinal and pharmaceutical preparations	6,801	19,768	19,677	20,103	1,788	5,730	5,891	5,423
Industrial chemicals	14,881	29,198	31,130	35,689	25,523	22,407	28,294	28,369
Pigments, paints, and varnishes	6,802	18,510	18,888	20,906	2,095	3,235	3,821	3,755
Fertilizers and materials	10,735	17,299	20,040	17,724	40,727	78,072	69,239	58,842
Explosives and fuzes	1,747	4,691	4,223	3,455	740	1,104	1,165	1,093
Soap	4,354	8,036	8,402	7,863	793	921	973	1,128
Perfumery and toilet preparations	1,209	8,083	8,404	8,991	1,716	6,214	5,577	7,045
Related products from other groups	**29,804**	**53,436**	**58,459**	**60,713**	**27,585**	**69,285**	**75,648**	**76,591**
Naval stores	23,363	30,877	36,019	33,228	47	277	517	350
Other gums and resins		933	845	1,097	11,878	30,474	33,529	32,186
Crude drugs and botanicals	1,935	2,961	3,578	3,587	4,166	7,934	9,221	9,034
Essential oils	656	1,673	1,695	2,118	3,355	6,345	6,573	6,449
Linseed and Chinese-wood oils	308	355	251	304	2,625	12,793	10,181	11,887
Sulphur	1,070	11,154	11,155	16,799				
Pyroxylin products	1,589	4,011	3,797	2,478	304	1,792	2,864	2,715
Matches	86	160	103	95	617	2,278	2,163	2,217
All other [1]	797	1,312	1,016	1,007	4,593	7,392	10,600	11,753

[1] Includes bones, gelatin, glue, natural dyes, casein, and waxes.

Source: Bureau of Foreign and Domestic Commerce.

Industrial chemicals.—In value, exports of industrial chemicals in 1927 were more than double the pre-war average and about 15 per cent greater than in 1926. The industrial-chemical group illustrates the tendency of chemical manufacturers and consumers to alter their commodities so as to conform with modern economic demands. The general trend of many of the industrial-chemical exports has been slightly downward, while the large increase which appears in the total of the group has been in the specialties such as

Chart I.—EXPORTS AND IMPORTS OF CHEMICALS AND RELATED PRODUCTS



packaged goods for cleaning or disinfecting purposes, composed largely of sodas, compressed gases, disinfectants, insecticides, fungicides, and similar commodities both household and agricultural. During the past few years the foreign trade in insecticides, fungicides, and disinfectants has shown a remarkable development. These are shipped to almost every foreign country. Germany, however, in 1927 was the outstanding individual buyer and took exports totaling approximately $850,000; other large customers were Argentina, France, United Kingdom, and Cuba.

Canada was again the leading consumer of our industrial chemicals, having purchased 27 per cent. Other important buyers were England, Japan, Germany, Mexico, Argentina, and Cuba. Germany doubled its purchases (to $1,755,000) during 1927.

Pigments, paints, and varnishes.—Exports of this class in 1927 were greater in value than during any year since 1920 and three times as great as before the war. This group likewise has world-wide distribution; Canada displaced the United Kingdom as the largest consumer, having taken 16 per cent of the total, while the United Kingdom took 13 per cent. Exports to Canada consisted of rather large purchases of all classes, while England owes its position to its large purchase of carbon black. Other important customers were France, Cuba, Germany, Argentina, Australia, Japan, Italy, and the Philippine Islands. Shipments to France, Germany, and Italy recorded decided gains, chiefly in carbon black. This latter class accounts for over one-fifth of the group total and had its best sales in western Europe. Zinc oxide, the most important pigment shipped abroad, is sold in relatively few countries, England and Canada being the main destinations. In contrast to pigments, paints and varnishes were shipped in considerable amounts to many countries.

Fertilizers.—Before the war American exports of fertilizers consisted chiefly of raw phosphate rock, but during recent years sulphate of ammonia has been the largest single item, and superphosphates, prepared fertilizers, and a combined ammonium-phosphate material for use as a fertilizer have become important. The significant feature of the 1927 export trade was the lower average unit value; total value declined 12 per cent, while total weight advanced 15 per cent. Fertilizers had a wider distribution in 1927 than in previous years; the Far East affords the best outlets, especially Japan and the Netherland East Indies. British South Africa, and British East Africa, which first became important factors in the trade in 1926, increased their purchases in 1927.

Because of a reduced demand from Japan and the Netherland East Indies, two of the largest purchasers of American ammonium sulphate in 1926, exports of this commodity fell sharply in 1927. Exports of phosphate rock were nearly one-quarter larger in 1927 and exports of superphosphates were two-thirds as much again as in 1926. Another really encouraging phase of the fertilizer trade lies

in the development of the "All other" class, which has been making rather important gains during the past few years. The bulk of this class is made up of a combined ammonium-phosphate material for use as a fertilizer.

Explosives.—Exports of explosives show less increase over pre-war years than most groups, and in 1927 were 18 per cent smaller than in 1926. Blasting powder and safety fuzes were the only classes to show improvement. Mexico was the outstanding factor. Peru, the next most important customer, increased its purchases by one-fifth during the year and took exports valued at $500,000.

Soaps, perfumery, and toilet preparations.—As compared with pre-war years, a considerable increase appears in the exports of soaps, both common and fancy, and there has been a great growth in the exports of perfumery and toilet preparations. American manufacturers have been extending their sales into practically every country of the world. Every item of the soap group, however, was exported in smaller quantity in 1927 than in 1926. American toilet preparations, particularly dentifrices, are found in practically every foreign country, but the English-speaking countries buy the most. England's large consumption of American dental creams and talcum powder, as well as all other toilet preparations—with one-fifth of the total foreign sales—places it above all other countries. Canada, Australia, and British Africa buy much the same kind of goods, but in smaller amounts. South and Central American countries are also steady customers.

Naval stores, gums, and resins.—The decline of 8 per cent in the value of exports of naval stores was entirely attributable to a drop in prices. The major markets—Germany, the United Kingdom, the Netherlands, Canada, Argentina, Brazil, Japan, and Australia—all increased their purchases of rosin and turpentine; the Netherlands, in fact, more than doubled its purchases. The quantity of naval stores exported is still somewhat less than before the war, owing to competition encountered in foreign markets, notably France.

Crude drugs and essential oils.—Prices of crude drugs and botanicals continued high during 1927, with little change in exports. Sales of ginseng fell off somewhat, chiefly because of reduced demand from China, which is the only important consumer of this drug; most of the shipments are sent direct to Hong Kong. The year 1927 was notable for price reductions of essential oils. The price of peppermint oil, which had a phenomenal rise in 1925, declined in both 1926 and 1927. The quantity exported in 1927 was about three times that of 1926. A considerable increase also occurred in exports of "All other essential oils." The United States has made steady progress in production of essential oils during the past few years. Even orange and lemon oils are now being distilled in sufficient quantities to permit exports to the United Kingdom and other European countries. The United Kingdom, Canada, Germany, and Australia are the best markets for essential oils.

Table 7.—Chemicals: Exports of Principal Products

[All figures for quantity are reported in thousands, the unit being the pound except as otherwise specified]

Article	Quantity (thousands of units specified)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Grand total, value					148,428	169,781	183,315	192,541
Chemicals and allied products (Group 8)					104,568	116,345	124,856	131,828
Coal-tar chemicals—								
Crudes					3,270	2,716	7,060	10,359
Intermediates	2,096	2,531	1,750	2,423	363	471	340	353
Colors, dyes, stains	15,713	25,800	25,812	26,766	5,635	6,694	5,950	5,491
Other finished products	2,610	4,145	2,480	4,789	707	880	744	894
Medicinal and pharmaceutical preparations					17,441	19,768	19,677	20,103
Industrial chemicals—								
Acids and anhydrides—								
Sulphuric	11,273	7,537	9,224	7,513	180	152	174	166
Other	12,201	15,608	16,382	14,247	779	829	830	789
Alcohols—								
Methanol (gallons)	641	408	417	311	687	321	312	263
Other (gallons)	312	454	425	477	213	387	235	467
Ammonia and compounds	3,496	4,521	4,878	4,338	916	871	675	561
Aluminum sulphate	32,024	41,512	44,063	42,258	408	506	521	492
Baking powder	3,952	4,026	4,501	4,747	1,535	1,533	1,634	1,710
Calcium compounds—								
Acetate of lime	23,167	22,038	18,589	11,634	733	685	626	409
Calcium carbide	9,668	4,855	4,534	4,873	428	208	184	197
Bleaching powder	21,602	27,389	20,358	16,089	380	472	388	311
Copper sulphate (blue vitriol)	2,988	6,139	4,799	6,207	143	286	231	321
Dextrin	22,191	22,678	22,200	24,659	900	1,031	906	1,002
Formaldehyde	2,898	2,799	2,387	2,240	322	291	226	207
Disinfectants, insecticides, etc			13,190	21,686			2,722	4,789
Potassium compounds	3,845	4,310	3,356	2,930	301	399	319	488
Sodium compounds—								
Borax	33,742	33,888	28,610	73,908	1,601	1,528	1,257	2,422
Soda ash	28,683	32,380	39,533	40,802	683	775	936	977
Caustic soda	92,116	100,955	103,295	100,889	2,863	2,996	3,112	2,994
Other compounds	160,990	188,122	174,600	175,948	3,357	3,054	3,122	3,281
All other industrial chemicals	102,854	105,426	115,216		11,207	12,873	12,717	13,842
Pigments, paints, and varnishes—								
Mineral earth pigments	28,207	31,265.	31,955	37,320	824	903	1,006	1,132
Chemical pigments—								
Carbon black, bone black, and lampblack	36,401	46,988	42,739	57,447	3,509	3,805	3,864	4,789
Other chemical pigments	26,845	46,077	52,809	52,157	2,389	3,873	4,120	3,784
Paints, stains, and enamels					5,998	7,904	7,857	8,590
Varnishes (gallons)	936	1,107	1,108	1,284	1,607	2,025	2,040	2,610
Fertilizers and materials—								
Sulphate of ammonia (tons)	118	123	181	140	6,919	6,749	9,824	6,827
Phosphate rock (tons)	819	870	749	918	5,121	5,678	4,436	4,733
Other (tons)	131	149	173	214	4,469	4,872	5,781	6,164
Explosives and fuzes—								
Smokeless powder	292	1,128	614	236	136	621	453	168
Dynamite	15,160	16,986	16,221	12,110	2,201	2,444	2,331	1,808
All other					1,358	1,626	1,439	1,479
Soap and toilet preparations—								
Soap—								
Toilet or fancy	5,376	6,761	8,975	8,186	2,401	2,805	3,038	2,801
Laundry	54,276	55,806	60,767	56,230	3,814	4,009	4,120	3,878
Other soap	17,724	13,098	13,625	12,992	1,518	1,222	1,245	1,183
Talcum, other toilet powders	3,229	3,469	3,289	3,254	1,688	1,882	1,727	1,621
Creams, rouges, and cosmetics	2,267	2,535	2,889	2,958	1,187	1,331	1,624	1,707
Dentifrices	3,078	3,406	3,610	4,525	2,793	3,211	3,381	3,740
Other toilet preparations	4,664	5,150	5,370		1,584	1,658	1,672	1,923
Related products from other groups					43,860	53,436	58,459	60,713
Naval stores, gums, and resins—								
Rosin (barrels)[1]	1,452	1,172	1,094	1,382	13,755	18,889	24,633	23,074
Spirits of turpentine (gallons)	11,510	11,557	11,587	15,810	10,105	11,346	10,636	9,505
Other gums, etc					1,449	1,575	1,595	1,747
Crude drugs and botanicals	7,890	5,881	5,102	5,033	4,040	2,961	3,578	3,587
Essential oils	1,275	1,389	3,135	3,825	1,675	1,673	1,695	2,118
Linseed oil	2,387	2,487	2,567	2,525	318	355	251	304
Sulphur (tons)	482	632	582	803	7,894	11,154	11,155	16,799
Pyroxylin in sheets, rods, tubes	2,004	2,464	2,323	1,530	2,017	2,087	1,712	1,303
Manufactures of	789	1,940	2,191	1,040	1,045	1,924	2,085	1,175
Matches	966	833	583	631	187	160	103	95
All other [2]	11,377	11,255	7,271	8,242	1,375	1,312	1,016	1,007

[1] Barrel of 500 pounds.
[2] Includes bones, gelatin, glue, and natural dyes, also beeswax in 1924.

Source: Bureau of Foreign and Domestic Commerce.

Imports by Classes.

Coal-tar chemicals.—In spite of the large development of coal-tar production in this country, imports of certain classes are still important. The aggregate value in 1927 was two-thirds more than the pre-war average and one-fifth greater than the 1926 figure. Nearly two-thirds of the coal-tar imports are composed of creosote oil, used largely as a wood preservative. England, Belgium, and the Netherlands are the principal suppliers of this oil. Dyes, colors, and stains, the other important class of this group, registered a 10 per cent increase from the 1926 figure. The dyes imported are largely of the higher-priced variety; during 1927 the prices of many of them were lowered. Imports from Germany increased nearly one-half (to $3,427,000), while those from Switzerland, second in importance, declined 14 per cent (to $1,869,000).

Medicinal and pharmaceutical preparations.—Imports of this group fell 8 per cent in 1927; imports of menthol, the outstanding commodity, decreased 20 per cent. Japan furnishes the bulk of this commodity, although some synthetic menthol is received from European countries. Most of the quinine imported comes from Java through the Netherlands and Japan.

Industrial chemicals.—Certain industrial chemicals, largely used for further elaboration by the American chemical industry, are imported in large amounts either because there is no domestic production or because domestic production is insufficient for the demand of the American industry, as in the case of glycerin. Imports of industrial chemicals were only very little larger in 1927 than in 1926, and one-tenth more than before the war. The increase as compared with pre-war years was confined largely to two commodities—crude iodine, which is imported from Chile, and glycerin, which originates in the European manufacturing countries. During 1927, however, there was a marked decline in imports of glycerin.

Most of the industrial chemicals imported are of European origin, although Canada participated to a greater extent during the past two or three years, raising its share of the trade to approximately 10 per cent in 1927. Receipts of industrial chemicals from Germany amounted to about one-third of the total and surpassed the 1926 figure by $1,000,000. The United Kingdom furnished a little less than 9 per cent of the total. Canada's large trade is due chiefly to sodium cyanide, cobalt oxide, and arsenious acid. About three-fifths of the total imports of sodium cyanide are of Canadian origin.

Pigments, paints, and varnishes.—Imports of this group declined 2 per cent in 1927 and are comparatively small; iron oxide pigments are imported from Spain and the United Kingdom, ochers and siennas from France, zinc pigments from the Netherlands, Belgium, and Germany, and paints from Germany, Czechoslovakia, and the United Kingdom.

Table 8.—Chemicals: Imports of Principal Products

[All figures for quantity are reported in thousands, the unit being the pound except as otherwise specified]

Article	Quantity (thousands of units specified)				Value (thousands of dollars)			
	1924	1925	1926	1927	1924	1925	1926	1927
Grand total, value					**185,289**	**207,625**	**210,414**	**206,234**
Chemicals and allied products (Group 8)					**120,031**	**138,340**	**134,766**	**129,643**
Coal-tar chemicals—								
Crudes					14,366	12,026	13,072	16,296
Intermediates	4,107	2,577	1,510	2,587	807	1,098	775	1,147
Dyes, colors, stains	3,440	5,785	4,973	5,497	4,462	7,166	5,601	6,182
Other finished products	256	169	115	176	484	367	359	363
Medicinal and pharmaceutical preparations					4,777	5,730	5,891	5,423
Industrial chemicals—								
Acids and anhydrides—								
White arsenic	17,704	18,631	15,407	25,034	1,591	1,076	510	922
Sulphuric	15,249	36,383	55,937	34,869	131	242	338	198
Tartaric	2,987	3,580	1,565	2,854	617	702	330	644
Other	8,482	11,598	16,894	18,144	864	1,100	1,271	1,569
Ammonium compounds—								
Nitrate	3,748	10,872	8,344	11,218	209	542	383	451
Other compounds	11,728	13,021	16,973	16,048	532	553	682	581
Barium compounds	14,050	20,112	24,477	14,649	354	298	314	239
Calcium carbide	15,525	14,241	21,845	4,561	587	515	847	171
Cobalt oxide	227	287	333	370	441	546	632	704
Citrate of lime	2,505	3,431	3,371	166	257	343	339	17
Glycerin	15,928	21,292	38,444	23,053	1,729	2,541	6,327	3,889
Iodine, crude		246	711	926		890	2,272	2,901
Potassium compounds—								
Hydroxide	12,657	12,257	12,969	14,762	700	734	771	916
Bitartrate, crude	16,744	24,666	25,570	24,906	1,094	1,690	1,791	2,289
Other compounds	26,094	51,430	56,924	44,984	1,453	2,167	2,203	1,970
Sodium compounds—								
Cyanide	29,737	30,212	31,804	32,559	2,658	2,600	2,558	2,604
Other compounds					1,050	920	1,437	1,756
Other industrial chemicals					3,959	4,950	5,290	6,548
Pigments, paints, and varnishes					2,823	3,235	3,821	3,755
Fertilizer and materials—								
Nitrogenous—								
Sodium nitrate (tons)	987	1,112	914	749	47,169	52,531	42,781	30,132
Other nitrogenous (tons)	191	260	230	302	7,297	10,621	9,918	12,283
Phosphates (tons)	45	36	69	102	964	914	1,662	2,102
Potash—								
Chloride, crude (tons)	129	161	199	164	3,972	5,194	6,196	5,739
Sulphate, crude (tons)	76	69	70	69	2,857	2,686	2,823	2,948
Manure salts (tons)	226	384	316	278	2,218	3,677	3,391	3,677
Other potash (tons)	201	206	230	112	1,393	1,494	1,713	1,060
Other fertilizers (tons)	38	39	54	43	660	956	755	901
Explosives					958	1,104	1,165	1,093
Soap and toilet preparations—								
Soap	4,872	5,492	6,331	5,969	760	921	973	1,128
Perfumery and toilet waters	1,424	1,418	1,486		2,200	2,092	2,138	1,984
Perfume materials					2,905	3,388	2,799	4,329
Cosmetics, powders, creams, etc	1,060	1,155	1,196	1,024	731	734	641	731
Related products from other groups					**65,258**	**69,285**	**75,648**	**76,591**
Naval stores, gums, and resins—								
Varnish gums and resins—								
Damar	9,626	12,697	15,156	15,492	1,088	1,569	2,280	2,128
Shellac	24,553	19,913	31,296	25,102	13,139	10,164	10,515	10,395
Other	33,691	41,672	56,800	53,382	5,116	6,670	7,515	7,513
Tar, pitch, and turpentine					152	277	517	350
Camphor—								
Natural, crude	1,848	2,369	2,019	1,690	999	1,301	1,158	810
Refined	2,862	1,584	1,170	1,481	1,781	953	763	823
Synthetic		1,835	2,944	2,934		921	1,558	1,263
Chicle	7,919	12,145	12,381	12,167	3,971	5,986	6,204	6,156
Balsams, crude	301	500	325	413	203	261	181	204
Gums, and resins, n. e. s.—								
Arabic	7,307	7,256	10,268	8,057	762	783	1,002	691
Other	8,428	18,197	22,103	16,282	1,051	1,866	2,354	2,202
Crude drugs and botanicals—								
Cinchona bark	2,396	2,917	3,906	1,936	706	906	1,056	546
Pyrethrum flowers	3,945	6,435	9,853	8,993	1,604	1,237	1,219	1,220
Licorice root	65,164	77,827	82,015	80,195	1,890	1,852	2,375	2,174
Other	24,857	24,689	27,892	26,256	3,702	3,940	4,571	5,094
Essential and distilled oils					5,528	6,345	6,573	6,449
Linseed oil	13,247	13,607	15,041	946	1,067	1,407	1,033	77
Chinese wood oil	81,588	101,554	83,004	89,650	11,092	11,386	9,148	11,810
Pyroxylin products, celluloid, pyralin, etc					1,633	1,792	2,864	2,715
Matches					2,198	2,278	2,163	2,217
All other [1]	177,991	186,389	224,879	263,201	7,575	7,392	10,600	11,753

[1] Includes bones, gelatin, glue, dyeing materials, casein, and waxes.

Source: Bureau of Foreign and Domestic Commerce.

Fertilizers and materials.—Imports of fertilizers and fertilizer materials in 1927 were 44 per cent greater in value than before the war, but 15 per cent less than in 1926. Imports of sodium nitrate, the largest single item, decreased nearly one-third from the 1926 figure, but were over 70 per cent larger than in pre-war years. Although in 1927 larger quantities of synthetic nitrogen were received from European sources, especially Germany and Norway, in the form of calcium nitrate and ammonium sulphate-nitrate, the increase did not offset the loss in sodium nitrate, the bulk of which comes from Chile. One of the most significant changes in 1927 was the doubling of the receipts of ammonium sulphate; these imports, however, were only about one-fourth as much as in the pre-war years.

Soap and toilet preparations.—In comparison with the exports, imports of soap are relatively unimportant. The value of imports of perfumery and toilet preparations was more than four times as great in 1927 as before the war, partly by reason of the large increase in consumption of finished articles of this group and partly on account of the growth of the domestic industry, which requires partly finished materials from abroad. In 1927 imports of perfume materials, which come chiefly from France, were 55 per cent greater than in 1926 and were the highest on record.

Gums, resins, balsams, and oils.—The increasing use of paints and varnishes in this country has led to greater imports of varnish gums and of Chinese wood oil, which is particularly used for varnishes. However, imports of lac (chiefly from India) were one-fifth less in quantity in 1927 than the year before though with little fall in value. Imports of damar from Java and British Malaya, kauri from New Zealand, and other varnish gums from British India, Siam, Philippine Islands, and Belgian Congo were also somewhat smaller. In the camphor trade an interesting development is the greater use of synthetic camphor from Germany.

Crude drugs and botanicals.—Imports of crude drugs and botanicals show a slightly higher average unit value in 1927 than in 1926. The increased use of household sprays for combating insects has led to a marked growth in imports of pyrethrum flowers, chiefly from Japan, Italy, and Yugoslavia. Although receipts in 1927 were about 9 per cent less than in 1926, they were considerably above all other years. Imports of licorice root were a little less than in 1926 and decidedly below the pre-war average in quantity. This product, which comes from Asia Minor, has been imported in excess of consumption, so that large quantities are being held in warehouses. Cinchona bark originates in the Netherland East Indies, but is reshipped from the Netherlands. Only about one-half as much was received in 1927 as in 1926 or as in pre-war years.

Essential oils.—With the growth of the domestic production of flavoring, medicinal, perfumery, and toilet preparations imports of essential oils have increased; the value in 1927 was nearly twice as large as that of imports before the war, although 2 per cent less than in 1926. In this group the substitution of the synthetic commodity for the natural, and the reduction of prices to meet competition, continued to be evident. This was especially true in the case of citronella and lemongrass oils from Java and Ceylon, which have increased in quantity but decreased in value. Of the flower oils, which come mainly from France and Algeria, geranium oil and attar of roses decreased somewhat in 1927, whereas imports of bergamot, lavender, and spike-lavender oils increased decidedly.

Italy supplies the major portion of the imports of citrus oils. With a greater activity on the part of domestic manufacturers, imports of lemon oil declined one-fifth in quantity. Jamaica has been assuming a prominent position as a source of supply for orange oil, and in 1927 one-third of the total receipts originated there. Consumption of both lemon and orange oils has increased greatly since pre-war years, necessitating appreciable imports.

TRANSPORTATION AND COMMUNICATION

RAILWAY TRANSPORTATION

SUMMARY.—Railway freight traffic during 1927 declined slightly as compared with 1926. Economy and efficiency, however, have been particularly noticeable in the operation of our railways since 1922. Revenue ton-miles of Class I railways in 1927 were 3.3 per cent less than in 1926. Operating revenues of Class I carriers during 1927 likewise were 3.8 per cent less than during the previous year and slightly less than in 1923. Operating expenses throughout 1927 were smaller by 2 per cent than during the previous year, while the net operating income decreased 12 per cent during 1927 as compared with a gain of 8.2 per cent in 1926 over 1925. Freight and passenger rates remained practically the same, as evidenced by the average revenue per ton-mile and per passenger-mile.

The traffic was moved without delay or interruption, with no car shortages and high car surpluses. The movement of goods during 1927 was completed with the greatest rapidity in railroad history. Gross ton-miles per train-hour during the year showed an increase of 47½ per cent as compared with 1920. The railway executives have now accomplished their objective to have the right kind of car at the right place at the right time and in proper condition, and to make prompt delivery of all shipments at point of destination.

The operating ratio for Class I railways during 1927 was 74.55, slightly higher than in 1925 and 1926 but considerably lower than in other postwar years. The net railway operating income for Class I railways for 1927 was 5 per cent of the aggregate tentative valuation of December 1, 1926. The ratio for the southern district was 6.1 per cent; for the western district, 4.4 per cent; and for the eastern district, 5.1 per cent.

Table 1.—Summary of Major Statistics of Railroads

NOTE.—Figures for 1927 do not include the smaller roads (Classes II and III). The percentages of increase over 1926 are computed from data for Class I roads only, as shown in subsequent tables.

Item	1913 [1]	1922	1923	1924	1925	1926	1927 [2]	Per cent change, 1927 from 1926 [3]
Number of miles owned	249,777	250,413	250,222	250,156	249,398	249,138	([4])	
Freight originated (million tons)	1,183	1,112	1,388	1,287	1,351	1,440	1,282	−4.1
Freight ton-mileage (million ton-miles)	301,730	342,188	416,256	391,945	417,418	447,444	429,044	−3.3
Average freight rate per ton per mile (cents)	[5] 0.729	1.194	1.132	1.132	1.114	1.096	1.081	([6])
Operating revenues (million dollars)	[5] 3,193	5,674	6,419	6,045	6,247	6,509	6,139	−3.8
Operating expenses (million dollars)	[5] 2,236	4,510	4,999	4,609	4,633	4,766	4,576	−2.0
Net railway operating income (million dollars) [7]	[5] 805	769	975	984	1,137	1,229	1,069	−11.9

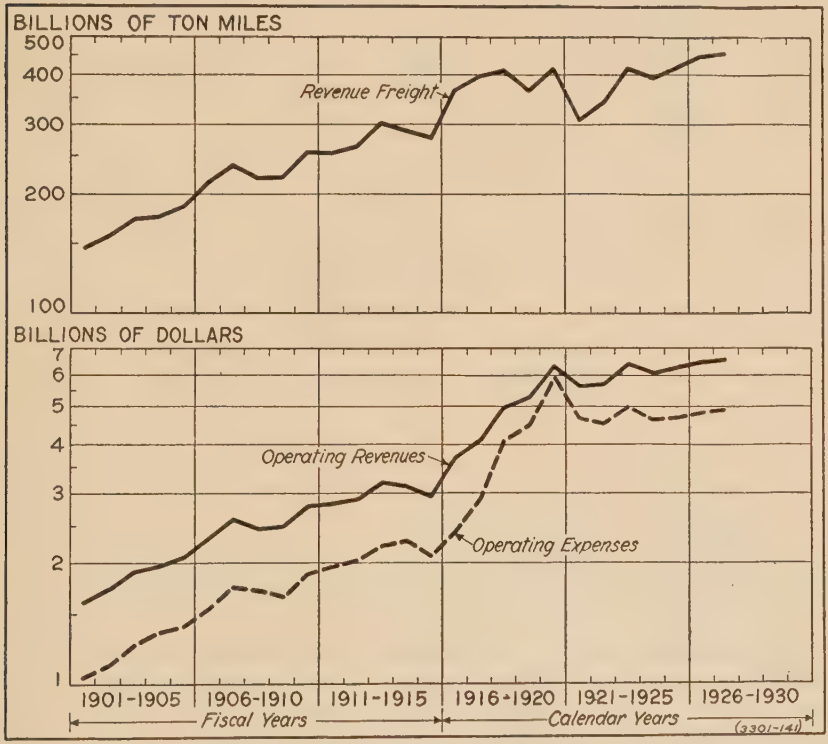
[1] Fiscal year ended June 30; other years ended Dec. 31.
[2] Class I roads, excluding switching and terminal companies.
[3] Percentages based on 1926 and 1927 figures for Class I roads only.
[4] Not available.
[5] Class I and II roads.
[6] No change.
[7] See footnote 2, Table 13.

TRAFFIC

Traffic Program and the Advisory Boards.

During 1927 a concerted effort to handle traffic without delay or interruption continued and all car requirements were met without car shortages. The average daily surplus of cars on hand was never less than 227,000 cars during any quarter. The percentage of unserviceable equipment, however, was less than in any of the four preceding years, the carriers averaging 5.9 per cent unserviceable freight cars during the year, as compared with an ideal goal of 5

Chart I.—FREIGHT MOVEMENT AND OPERATING REVENUES AND EXPENSES OF RAILWAY COMPANIES



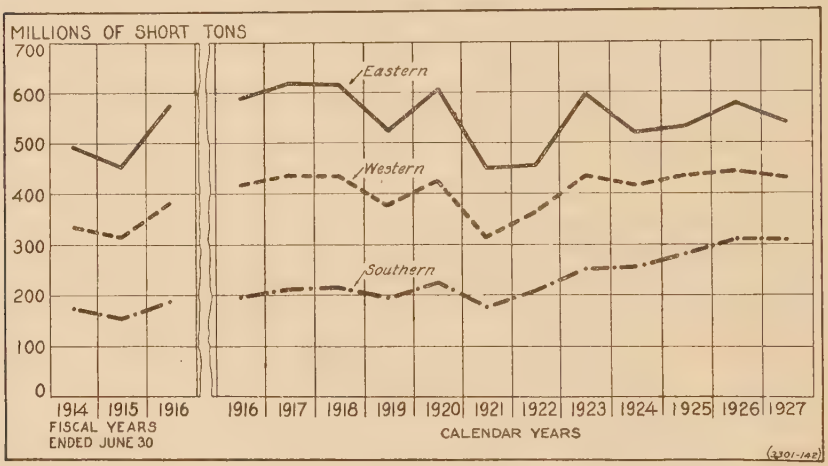
per cent; and 16.2 per cent unserviceable locomotives, as compared with an ideal goal of 15 per cent.

The 13 regional advisory boards which have been organized throughout the country by the American Railway Association have now become permanent parts of our transportation structure. These boards are composed of representatives of production, distribution, consumption, and finance. They are voluntary organizations, cooperating with the carriers, each board representing a territory which has common business and transportation interests. Their purpose is to promote economic and transportation welfare in each territory,

to assist the railroads, individually and collectively, in problems of car supply and all matters pertaining to transportation requirements, with the exception of freight-rate adjustments. Each of these regional advisory boards is organized by commodity groups in order that the various business interests in each section may be adequately represented. A substantial part of the credit for the increased efficiency in railroad operation during the past few years is accorded to the shippers and receivers and other groups interested in freight movement, through the medium of these advisory-board organizations.

Railway operating efficiency, resulting in the present rapid and reliable delivery of freight, has been an important factor in the reduction of inventories and the speeding up of business generally. The quicker loading and unloading of equipment have aided greatly in

Chart II.—REVENUE FREIGHT ORIGINATED, BY DISTRICTS (CLASS I ROADS)



the efficiency of our railway facilities. Generally speaking, freight is delivered to-day in approximately one-half the time required seven years ago. The quarterly prognostications of car requirements obtained through the regional advisory board members have assisted the railroads greatly in determining the amount and kind of equipment for the carriage of both seasonal and regular-moving freight.

During 1927 the average daily movement of a freight car was equal to the 1926 record, 30.4 miles, and this was 13.4 per cent greater than the record of 1925. The peak month, October, showed an average of 34.7 miles per car per day, which was 1 per cent greater than during the corresponding month in 1926. The idle cars, serviceable and unserviceable, are included in the data on which these averages are based. The actual mileage of freight cars in use, therefore, is considerably greater than these figures indicate. A high average in this item during a period of high car surpluses is indicative of even greater efficiency of operation than the figures show.

Table 2.—Mileage and Traffic of Railways

NOTE.—Data for all roads for 1927 not yet available, but Class I roads handle the great bulk of the business. Per capita figures are based on total population of United States.

Yearly average or year ended—	Number of miles owned	Revenue freight					Revenue passengers		
		Ton-miles		Average tons per loaded car	Average tons per train	Revenue per ton-mile (cents)	Passenger-miles		Revenue per passenger-mile (cents)
		Millions	Per capita				Millions	Per capita	
June 30:									
1891–1895 [1]	[1] 163,597	85,693	1,280	([2])	184	0.886	13,383	200	2.10
1896–1900 [3]	[3] 180,657	113,962	1,551	([2])	229	.772	13,863	189	2.02
1901–1905	207,938	167,715	2,071	17.4	304	.774	20,737	256	2.01
1906–1910	232,982	228,936	2,570	19.5	359	.762	28,683	322	1.98
1900	193,346	141,597	1,859	([2])	271	.729	16,038	211	2.00
1905	218,101	186,463	2,214	18.1	322	.766	23,800	283	1.96
1911	243,979	253,784	2,709	19.7	383	.757	33,202	354	1.97
1912	246,777	264,081	2,777	20.2	407	.744	33,132	348	1.99
1913	249,777	301,730	3,126	[4] 21.1	[4] 445	[4] .729	34,673	359	[4] 2.01
1914	252,105	288,637	2,947	21.1	447	.737	35,357	361	1.99
1915	253,789	277,135	2,790	21.1	476	.735	32,475	327	1.99
Dec. 31:									
1916	254,037	366,173	3,634	22.8	552	.719	35,220	350	2.05
1917	253,626	398,263	3,898	24.8	588	.728	40,100	392	2.10
1918	253,529	408,778	3,946	27.0	621	.862	43,212	417	2.42
1919	253,152	367,161	3,497	25.4	623	.987	46,838	446	2.55
1920	252,845	413,699	3,887	26.7	639	1.069	47,370	445	2.76
1921	251,176	309,533	2,854	24.6	567	1.294	37,706	349	3.09
1922	250,413	342,188	3,114	24.3	599	1.194	35,811	326	3.04
1923	250,222	416,256	3,727	25.2	632	1,132	38,294	343	3.03
1924	250,156	391,945	3,446	24.5	634	1.132	36,368	320	2.99
1925	249,398	417,418	3,618	24.6	663	1.114	36,167	313	2.94
1926	249,712	447,444	3,749	24.9	689	1.096	35,673	303	2.94
1927 [5]	([2])	429,044	3,595	([2])	([2])	1.081	33,655	297	2.90

[1] Mileage in 1890.
[2] Not available.
[3] Mileage in 1895.
[4] Class I and II roads.
[5] Class I roads.

Source: Interstate Commerce Commission.

Revenue Freight Tonnage.

Tons of revenue freight originated were 4.1 per cent less in 1927 than in 1926 (Class I roads); tonnage, however, was slightly greater in 1927 than during the previous peak year, 1923. The decrease in 1927 as compared with 1926, in the eastern and western districts, amounts to 6.7 per cent and 3.1 per cent, respectively, and in the southern district to less than 1 per cent. The relative importance of the three districts has not changed greatly during the 13-year period covered by Table 3, except that there has been some gain in the southern district at the expense of the other two.

Ton-miles of revenue freight carried by Class I roads in 1927 totaled 429,044,000,000 as compared with 443,746,000,000 in the previous year, a decrease of 3.3 per cent. This performance represents over 42 per cent more ton-miles than in the fiscal year 1913. It should be borne in mind that the year 1926 had witnessed an altogether exceptional increase in traffic, especially in coal, production of which was stimulated by the British coal stoppage and by anticipation of a possible domestic strike in 1927.

Table 3.—Freight Traffic of Class I Railways,[1] by Districts

Year	Revenue freight originated (thousands of tons)				Ton-miles of revenue freight (millions)			
	Total	Eastern	Southern	Western	Total	Eastern	Southern	Western
1914 [2]	1,008,460	496,101	174,319	338,040	284,925	143,116	49,524	92,285
1915 [2]	923,428	453,741	154,482	315,205	273,913	135,643	47,325	90,945
1916	1,203,367	590,301	196,392	416,674	362,444	177,487	61,706	123,251
1917	1,264,016	617,844	211,475	434,697	394,465	187,966	68,371	138,128
1918	1,263,344	614,704	216,082	432,558	405,379	190,943	72,101	142,335
1919	1,096,111	523,811	194,564	377,737	364,293	170,118	64,000	130,176
1920	1,255,421	606,786	224,127	424,508	410,306	188,518	76,925	144,863
1921	940,183	449,674	177,258	313,250	306,840	138,503	59,679	108,658
1922	1,023,745	452,238	208,589	362,919	339,285	151,210	69,565	118,511
1923	1,279,030	597,892	249,638	431,500	412,727	193,988	81,705	137,034
1924	1,187,296	519,595	252,888	414,813	388,415	170,039	82,351	136,025
1925	1,247,242	531,309	281,715	434,218	413,814	179,484	91,934	142,396
1926	1,336,142	580,200	310,578	445,364	443,746	193,717	101,426	148,603
1927	1,282,027	541,082	309,217	431,728	429,044	183,986	96,368	148,690
Per cent change from 1926	−4.1	−6.7	−0.4	−3.1	−3.3	−5.0	−5.0	+0.1

[1] Includes all roads with an annual operating revenue exceeding $1,000,000; these account for about 93 per cent of the number of tons originated and 99 per cent of the ton-mileage.
[2] Year ended June 30; excludes some unassigned originating freight.

Source: Interstate Commerce Commission.

While both tons of freight originated and ton-miles are excellent indexes of railway traffic, neither presents an entirely accurate picture. Statistics of tons originated somewhat understate the increase in volume of freight handled, since they do not take into consideration changes in the average length of haul, which has increased since pre-war years. On the other hand, an increase or decrease in the number of ton-miles does not necessarily represent a proportional change in the transportation burden imposed upon the railways. Neither the revenue nor the expense of handling a shipment 200 miles is twice as much as for hauling it 100 miles.

Revenue freight originated was slightly less during each of the last three quarters of 1927 than in the corresponding periods of 1926; the first quarter showed an increase of 7 per cent. The 1927 figure exceeded that for the previous peak year, 1923, in the first and third quarters, and practically equaled it in the second and fourth quarters.

Table 4.—Revenue Freight Originated, Class I Railways, by Quarters

[In thousands of tons]

Quarter ended—	United States					Eastern district		Southern district		Western district	
	1923	1924	1925	1926	1927	1926	1927	1926	1927	1926	1927
Mar. 31	284,253	276,352	273,464	280,000	299,916	122,627	136,292	73,524	76,929	83,849	86,695
June 30	326,660	277,242	303,785	323,504	318,971	142,492	135,417	74,425	77,789	106,587	105,765
Sept. 30	347,323	312,378	345,765	371,543	350,982	155,070	141,644	79,916	81,239	136,557	128,099
Dec. 31	319,249	320,490	323,779	360,647	312,538	159,252	128,107	83,031	73,259	118,364	111,172

Source: Interstate Commerce Commission.

Total revenue freight carried on Class I railways, including duplications of tonnage received by one line from another, totaled 2,351,000,000 tons in 1927, and was greater than in any other year except 1926. Revenue freight originated in the western district during 1927 was approximately three-fifths of the total revenue freight carried in that district, the corresponding proportions being two-fifths in the eastern district and three-fourths in the southern district.

Table 5.—Revenue Freight Carried in Each District, Class I Railways

[In thousands of tons. Figures include freight received by each line from other lines]

Year	Total	Eastern	Southern	Western
June 30, 1914	1,780,217	1,105,437	256,516	481,264
1915	1,684,659	1,003,358	231,971	449,330
Dec. 31, 1916	2,179,697	1,283,711	298,063	597,923
1917	2,270,035	1,302,098	326,115	641,822
1918	2,307,226	1,317,918	341,295	648,013
1919	2,044,392	1,156,365	306,279	581,748
1920	2,259,983	1,253,468	348,533	657,982
1921	1,690,763	934,694	266,413	489,656
1922	1,840,955	975,691	314,370	550,894
1923	2,333,601	1,295,112	381,376	657,113
1924	2,171,719	1,146,945	382,712	642,062
1925	2,304,275	1,208,296	423,769	672,210
1926	2,465,369	1,309,242	461,263	694,864
1927	2,350,578	1,237,669	437,947	674,962

Source: Interstate Commerce Commission.

Table 6.—Ton-Miles of Revenue Freight Carried by Class I Railways, by Months

[In millions of ton-miles]

Month	All roads							
	1920	1921	1922	1923	1924	1925	1926	1927
January	32,016	26,627	23,742	34,020	30,614	33,119	33,648	34,854
February	30,291	22,200	25,453	29,464	32,135	30,557	31,876	33,449
March	32,910	24,232	29,468	35,302	32,970	31,915	35,351	37,661
April	27,324	23,084	22,290	34,794	29,092	30,353	32,935	33,516
May	32,918	25,252	25,064	35,994	30,522	33,164	35,701	36,174
June	35,047	25,442	26,477	34,234	28,759	32,784	35,724	34,848
July	37,076	25,397	24,686	34,519	29,925	34,470	37,928	34,479
August	39,185	27,529	27,881	36,203	32,626	37,670	39,744	38,174
September	37,867	27,849	31,674	35,440	35,449	37,987	40,663	39,060
October	39,101	32,622	36,010	38,285	39,266	40,369	43,931	41,616
November	34,677	26,853	34,719	34,687	34,757	37,242	40,360	34,290
December	31,613	23,260	32,810	30,594	33,053	34,906	36,647	31,381

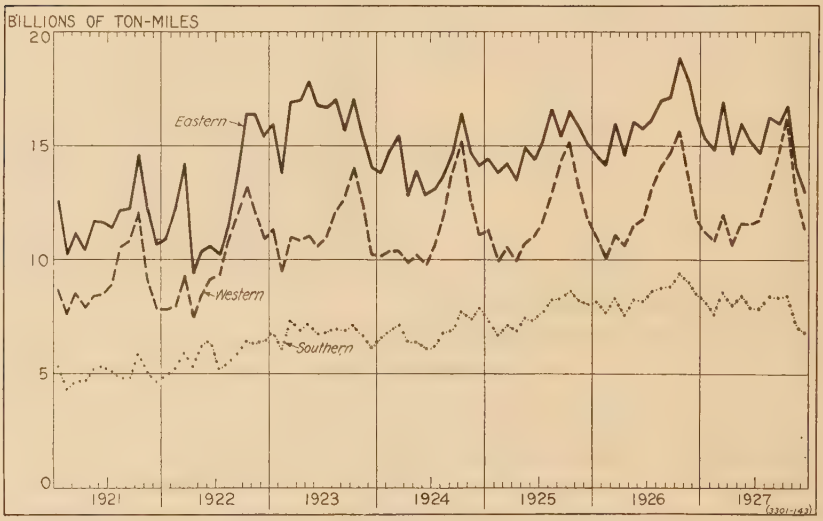
Month	Eastern district			Southern district			Western district		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
January	14,462	14,485	15,363	7,301	8,231	8,244	11,356	10,932	11,247
February	13,863	14,163	14,870	6,771	7,701	7,717	9,923	10,012	10,862
March	14,265	15,955	16,929	7,107	8,348	8,593	10,543	11,048	12,139
April	13,523	14,676	14,736	6,855	7,617	8,087	9,975	10,642	10,693
May	14,926	15,984	16,073	7,492	8,245	8,425	10,746	11,472	11,676
June	14,454	15,775	15,259	7,317	8,189	7,947	11,013	11,760	11,642
July	15,129	16,135	14,739	7,710	8,717	7,920	11,631	13,076	11,820
August	16,602	16,986	16,299	8,247	8,756	8,428	12,821	14,002	13,447
September	15,417	17,160	16,054	8,314	8,785	8,373	14,256	14,718	14,633
October	16,575	18,843	16,874	8,687	9,453	8,461	15,107	15,635	16,281
November	15,902	17,836	14,154	8,247	9,036	7,239	13,093	13,488	12,897
December	15,014	16,362	13,059	8,075	8,508	6,909	11,817	11,777	11,413

Source: Interstate Commerce Commission.

The ton-mileage of revenue freight carried by Class I railways during the first five months of 1927 exceeded that of the corresponding months of 1926; there was a slight decrease during each of the last seven months. The western district showed a slight increase in 1927 over 1926, while the eastern and southern districts each showed decreases of about 5 per cent.

A much larger growth in railroad traffic has been evident than that of our population since the beginning of the present century. Between 1901 and 1913, the ton mileage of the carriers practically

Chart III.—TON-MILES OF REVENUE FREIGHT (CLASS I ROADS)



doubled. Since 1913, there has been a further growth of about 50 per cent in the volume of traffic (measured by ton miles).

Revenue Freight Originated, by Commodities.

The character of the freight traffic handled by the railroads is shown in Table 7. Products of mines have made up well over one-half of the freight originated in each year, amounting to 55.7 per cent in 1927, as compared with 56.7 per cent in 1926 and with 56.1 per cent in 1913. Since 1913 the volume of agricultural products handled has been over 100,000,000 tons annually (not counting livestock) and has varied comparatively little. There has been a marked increase in the tonnage of manufactures and miscellaneous traffic (in car lots) since pre-war years. In 1927, as compared with the previous year, there was a decrease in loadings of all commodities, except products of agriculture, which showed an increase of 1.4 per cent. The greatest decreases occurred in the products of mines, whereas the greatest increases shown in 1926 were in these same commodities. Loadings of forest products have declined in each year since 1923, the total

decrease amounting to 14 per cent. Apart from products of mines, which count more in weight than in revenue, the total tonnage originated declined less than 2 per cent as compared with 1926; coal alone accounted for more than half of the decrease.

Table 7.—Revenue Freight Originated on Railways, by Commodity Groups

[In thousands of tons]

Year ended—	Total [1]	Products of agriculture	Animals and products	Products of mines		Products of forests	Manufactures and miscellaneous	Merchandise (less than car lots)
				Coal	All other			
CLASS I AND II ROADS								
June 30, 1911	981,293	84,478	23,611	335,685	195,907	97,427	172,554	36,293
1912	1,011,784	89,688	24,799	352,770	206,371	91,359	176,266	38,118
1913	1,160,863	106,067	26,446	390,701	260,239	112,079	206,787	42,520
1914	1,109,271	102,200	27,139	383,882	242,194	110,878	186,358	41,474
1915	1,005,029	113,040	26,660	348,139	208,443	93,971	163,988	48,163
Dec. 31, 1916	1,293,091	116,867	31,294	422,853	314,298	111,850	239,849	54,420
CLASS I ROADS								
Dec. 31, 1916	1,203,367	113,635	30,473	392,499	287,624	93,819	231,038	52,911
1917	1,264,016	104,629	31,858	443,722	288,931	100,838	240,269	53,769
1918	1,263,344	116,051	35,777	466,483	268,313	97,256	226,077	53,387
1919	1,096,111	115,033	35,494	375,022	214,929	94,076	210,256	51,302
1920	1,255,421	110,840	26,595	462,449	249,705	100,766	251,864	53,202
1921	940,183	114,069	24,263	365,850	145,420	76,419	172,169	41,992
1922	1,023,745	111,787	26,230	336,438	196,560	89,059	220,442	43,229
1923	1,279,030	109,318	28,254	443,983	269,752	115,618	267,767	44,338
1924	1,187,296	116,587	27,747	396,475	241,107	108,094	256,737	40,549
1925	1,247,242	109,313	26,324	404,606	273,730	107,391	285,291	40,587
1926	1,336,142	111,787	26,244	464,751	292,952	104,851	296,066	39,491
1927	1,282,027	113,375	26,009	434,018	279,713	99,391	291,089	38,432
Per cent change 1927 from 1926	−4.1	+1.4	−0.9	−6.6	−4.5	−5.2	−1.7	−2.7

[1] Down to 1916, inclusive, undistributed freight is included in total but not shown elsewhere, as follows: 1911, 35,338 tons; 1912, 32,414; 1913, 16,022; 1914, 15,147; 1915, 2,625; 1916, 1,660; 1916, Class I, 1,367.

Source: Interstate Commerce Commission.

Car Loadings—Surpluses and Shortages.

The total number of cars loaded (revenue freight) during 1927 was 51,714,000—2.6 per cent less than in 1926, which was the greatest in the history of the railroads. In Table 8 average weekly car loadings are shown by quarters, the original statistics being based on weeks rather than on months, to avoid the effect of the varying lengths of the months.

Car shortages were practically nonexistent during the year 1927. Although figures of car surpluses and shortages are not entirely satisfactory as an index to the carriers' capacity to take care of traffic requirements, they present an approximate picture of the situation. Frequently shippers order more cars than are needed during a period of shortage in the hope of thus getting their minimum requirements. This causes an overstatement of deficiency in equipment. Both surpluses and shortages are reported as aggregates for the same days, owing to the fact that there may be a shortage in one region while there is a surplus in another, because of differences in seasonal factors affecting agricultural produce.

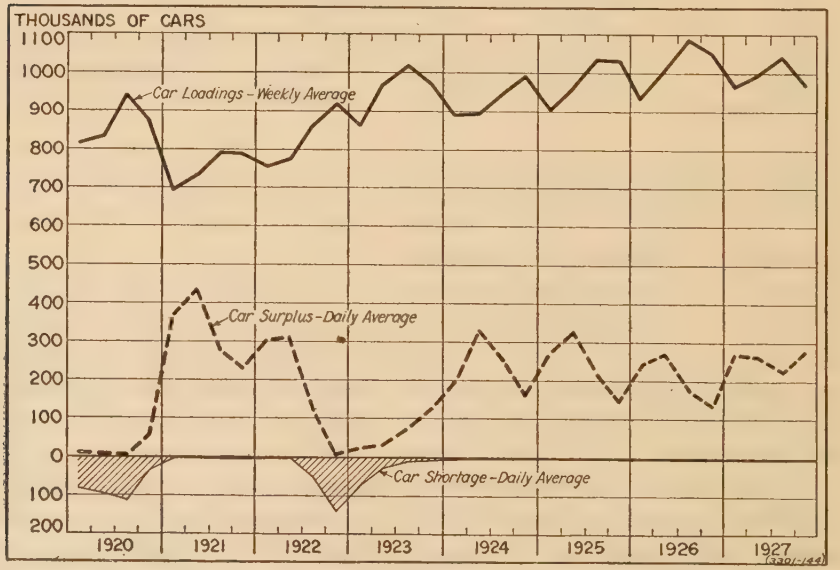
Table 8.—Revenue Car Loadings and Surpluses and Shortages of Cars of Class I Railways, by Quarters

Period	1920	1921	1922	1923	1924	1925	1926	1927
Average weekly loadings:								
January–March	813, 716	696, 064	756, 611	865, 039	890, 052	904, 137	936, 785	968, 727
April–June	831, 962	735, 160	775, 238	969, 505	892, 210	960, 437	1, 002, 013	997, 050
July–September	939, 706	793, 883	859, 376	1, 017, 055	947, 468	1, 033, 585	1, 086, 538	1, 041, 906
October–December	880, 156	792, 346	919, 875	971, 883	994, 317	1, 032, 302	1, 050, 446	970, 225
Average daily surpluses:								
January–March	8, 027	370, 195	301, 000	20, 568	196, 469	265, 078	242, 091	272, 757
April–June	4, 250	436, 206	309, 668	29, 923	332, 097	327, 368	269, 484	263, 013
July–September	2, 067	278, 712	118, 271	69, 664	255, 729	216, 150	174, 243	226, 877
October–December	53, 966	230, 032	6, 468	120, 104	161, 501	148, 762	134, 354	281, 190
Average daily shortages:								
January–March	81, 280	781	504	73, 975	3, 096	260	133	144
April–June	96, 057	301	1, 519	27, 019	197	58	32	23
July–September	113, 212	1, 835	51, 000	9, 735	237	444	199	228
October–December	35, 820	2, 898	138, 504	6, 136	649	1, 123	778	277

Source: American Railway Association.

The fact that 1921 showed very little shortage of equipment was due to the lack of demand for cars, which resulted from the business depression. On the other hand, the adequacy of car supply in the

Chart IV.—CAR LOADINGS AND SURPLUSES AND SHORTAGES OF CARS, BY QUARTERS (CLASS I ROADS)



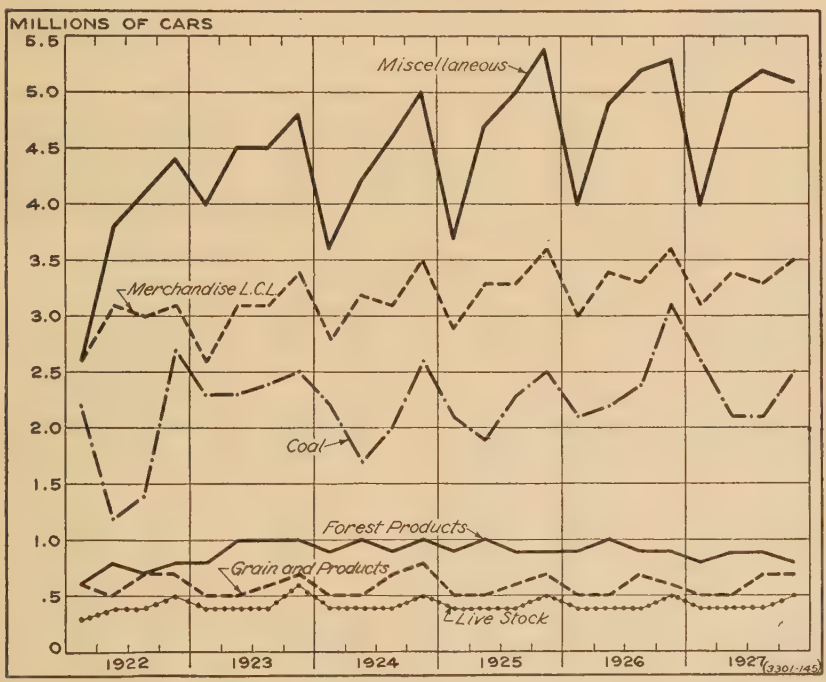
last four years, and more especially in 1927, in the face of heavy traffic, was due not only to better management and the ownership of larger and better cars by the carriers but also to the cooperation of the buyers of rail transportation in giving the railroads, 90 days in advance, an estimate of the amount and kind of equipment that would be required.

Car loadings during every quarter of 1927 except the first were slightly less than those of the corresponding periods of 1926. This resulted in somewhat larger surpluses of equipment during 1927. During the last quarter daily surpluses of cars averaged 281,000. Traffic was handled most satisfactorily, without delay or interruption.

Car Loadings, by Commodities.

The figures of car loadings, by quarters, for major commodities, show certain fairly regular seasonal fluctuations. (Table 9.) The

Chart V.—CAR LOADINGS OF PRINCIPAL COMMODITY GROUPS, BY QUARTERS (CLASS I ROADS)



improved service of the carriers has resulted generally in more seasonal loadings because of lessening of stocks carried. Grain and grain products normally move in greater volume during the last half than the first half of the year. Loadings of forest products showed little change in 1926 and 1927, shipments being slightly greater during the first six months of each year. The ore shipments varied seasonally as usual, the heaviest movement coming from May to October.

In 1927 there was a slight further increase in shipments of merchandise in less than carloads, which showed continued quick-order buying resulting from fast and efficient delivery by the carrier. These figures, however, are not considered indicative, because of

the basis upon which they are computed. As compared with 1921, when the service was much slower and not so dependable, total carloadings in 1927 were greater by about 12,400,000 cars, loadings of merchandise in less than carloads increased over 2,300,000, and miscellaneous loadings over 6,500,000.

Table 9.—Car Loadings (Revenue Freight), by Commodity Groups, Class I Railways

[In thousands of carloads]

Period	Total	Grain and products	Livestock	Forest products	Coal	Coke	Ore	Merchandise, less than car lots	Miscellaneous
1920	45,118	1,843	1,553	3,058	10,082	648	2,410	9,013	16,511
1921	39,323	2,293	1,497	2,488	7,975	317	907	11,010	12,836
1922	43,208	2,453	1,626	2,916	7,384	488	1,590	11,826	14,925
1923	49,812	2,276	1,768	3,745	9,504	717	2,342	12,165	17,295
1924	48,534	2,571	1,753	3,667	8,537	518	1,679	12,520	17,289
1925	51,224	2,305	1,636	3,737	8,905	623	2,012	13,193	18,813
1926	53,099	2,363	1,596	3,654	9,932	683	2,179	13,311	19,380
1927	51,714	2,390	1,548	3,421	9,242	549	1,882	13,328	19,356
Per cent change from 1926	−2.6	+1.1	−3.0	−6.4	−6.9	−19.6	−13.6	+.1	−.1
1925									
January–March	10,850	530	387	902	2,141	158	128	2,887	3,717
April–June	12,486	459	352	995	1,932	133	603	3,344	4,669
July–September	13,437	629	376	894	2,294	128	801	3,321	4,994
October–December	14,452	688	520	947	2,538	205	480	3,641	5,433
1926									
January–March	11,241	519	360	875	2,174	201	122	3,028	3,961
April–June	13,026	505	354	982	2,180	156	567	3,395	4,888
July–September	14,125	693	398	901	2,439	151	975	3,334	5,234
October–December	14,706	647	484	896	3,139	175	514	3,554	5,297
1927									
January	3,784	184	130	258	894	49	38	985	1,247
February	3,824	178	111	276	854	50	43	1,010	1,303
March	4,016	160	109	282	847	49	43	1,071	1,455
April	4,891	188	137	344	794	58	112	1,335	1,922
May	4,097	159	115	284	647	43	238	1,050	1,561
June	3,974	156	108	271	611	42	256	1,002	1,528
July	4,935	230	128	321	722	49	318	1,251	1,918
August	4,249	220	112	275	697	39	248	1,043	1,615
September	4,360	239	123	270	721	39	226	1,039	1,702
October	5,588	274	194	337	957	48	244	1,349	2,188
November	3,823	182	135	244	677	36	76	1,016	1,457
December	4,173	219	145	260	822	48	41	1,178	1,461

Source: American Railway Association.

Ratios Bearing on Railway Efficiency.

Compared with 1913, car-miles per car-day have increased 24 per cent, while the index of traffic units handled per employee has risen 34 per cent. Probably the best indication of operating efficiency is the number of gross ton-miles per train-hour. These data are not available for 1913, but the increase since 1920 amounts to 48 per cent. The net ton-miles per train-hour have increased 31 per cent during the same period. The net tons of revenue freight per loaded car in 1927 decreased slightly from 1926. The pounds of

coal consumed per 1,000 gross ton-miles decreased approximately one-third between 1913 and 1927, and about one-fourth between 1920 and 1927. In the passenger service the pounds of coal consumed per passenger train car-mile decreased approximately one-fifth between 1920 and 1927.

Table 10.—Sundry Performance Ratios Bearing on Railway Efficiency

Item	1913	1920	1922	1923	1924	1925	1926	1927	1927 compared with—	
									1913	1920
Freight service performance:									*P. ct.*	*P. ct.*
Car-miles per car-day	24.5	25.1	23.5	27.8	26.8	28.5	30.4	30.4	+24.1	+21.1
Index of traffic units handled per employee [1]	100.0	119.9	120.7	124.9	124.9	131.7	136.2	134.4	+34.4	+12.1
Revenue per ton-mile (cents)	0.719	1.052	1.177	1.116	1.116	1.097	1.082	1.081	+50.3	+2.8
Gross tons per train (excluding locomotives and tender)	------	1,443	1,464	1,539	1,588	1,670	1,737	1,780	------	+23.4
Net tons revenue freight—										
Per train	------	708	676	713	715	744	772	778	------	+9.9
Per loaded car	------	29.3	26.9	27.9	27.0	27.0	27.4	27.2	------	−7.2
Speed of freight trains per hour (miles)	------	10.3	11.1	10.9	11.5	11.8	11.9	12.3	------	+19.4
Gross ton-miles per train-hour (excluding locomotives and tender)	------	14,877	16,188	16,764	18,257	19,685	20,705	21,945	------	+47.5
Net ton-miles per train-hour	------	7,302	7,479	7,770	8,222	8,773	9,207	9,585	------	+31.3
Pounds of coal (or equivalent) consumed per 1,000 gross ton-miles (excluding locomotives and tender)	[2] 232	197	186	183	170	159	155	148	−36.2	−24.9
Passenger service performance:										
Passenger locomotive-miles per locomotive-day	------	116.6	101.7	108.6	108.5	110.4	113.8	114.4	------	−1.9
Pounds of coal (or equivalent) consumed per passenger train car-mile	[2] 19.8	18.8	17.9	18.1	17.0	16.1	15.8	15.4	−22.2	−18.1

[1] Traffic unit equals passenger-miles times 3 plus ton-miles, 1913 base year.
[2] Estimated.
Source: Bureau of Railway Economics.

In the spring of 1923 the chief executives of the principal railway carriers of the country agreed upon a comprehensive, concerted, cooperative program "To insure, to the highest degree practicable, adequate provision for the country's transportation requirements." The objective of the executives was to have the right kind of car at the right place at the right time and in proper condition, and to make prompt delivery of the shipments at the point of destination.

Railway efficiency, as indicated in the performance ratios in Table 10, has steadily increased since the inauguration of this program. Along with the increase in the speed of the trains, an increase in the ton-miles per train-hour, a decrease in the amount of coal consumed per ton-mile, and an increase in the traffic units handled per employee, we find the public cooperative interest and activity through the regional advisory boards speeding up the loading and unloading of cars.

RATES AND FARES

Since the reductions of 1922 no sweeping changes have occurred in freight rates or passenger fares, although slight adjustments in rates have been made within certain rate territories and also on certain commodities. For the most part changes in total railroad revenues during the last few years reflect changes in volume, distance hauled, or character of freight and passenger traffic. The average revenue per ton-mile in 1927 was about 15 per cent lower than in 1921, based upon returns of Class I carriers. Had the 1921 ton-mile revenue average applied in 1927 the operating revenues would have been approximately $832,000,000 greater.

Receipts Per Ton-Mile, by Districts.

Average receipts per ton-mile constitute a rough index of the general level of freight rates, weighted in accordance with the volume of the various items comprising the traffic and the distance carried, although a change in the character of traffic may change average receipts when actual rates remain constant. The year 1921 showed the highest average receipts, since which time there has been in each year a decline in all districts, except for advances in the eastern district from 1923 to 1924, and in the southern district from 1926 to 1927.

Compared with 1913, the general average for 1927 (1.081 cents per ton-mile) is higher by 50 per cent. This is somewhat greater than the general increase in the average level of wholesale prices, which in 1927 was 47 per cent above 1913. The differences in average receipts as among the districts are partly a result of differences in the character of freight handled. The southern district includes the roads of the Pocahontas region, which carry a large volume of coal at a low average cost per ton-mile.

Table 11.—Average Receipts per Ton per Mile of Class I Railways (Cents)

Year	Total United States	District			Year	Total United States	District		
		Eastern	Southern	Western			Eastern	Southern	Western
1913 [1]	0.719	0.628	0.674	0.884	1920 [1]	1.052	1.020	0.909	1.170
1914 [1]	.723	.633	.668	.892	1921	1.275	1.243	1.079	1.422
1915 [1]	.722	.646	.639	.878	1922	1.177	1.172	.989	1.292
1916 [1]	.707	.647	.619	.842	1923	1.116	1.104	.959	1.227
1916	.707	.646	.622	.836	1924	1.116	1.122	.948	1.208
1917	.715	.663	.635	.824	1925	1.097	1.107	.926	1.195
1918	.849	.813	.755	.944	1926	1.081	1.094	.901	1.187
1919	.973	.914	.873	1.098	1927	1.081	1.094	.905	1.179

[1] Years ended June 30; others are calendar years.

Source: Interstate Commerce Commission.

EMPLOYMENT AND WAGES

The average number of Class I Railway employees in 1927 was 1,737,000, which was 2.4 per cent less than in 1926. The total compensation paid these employees in 1927 was $2,911,000,000 as compared with $2,946,000,000 in 1926. These data exclude switching and terminal companies. The average number of employees on all railways approximated 1,779,000 in 1927, a decrease of 2.8 per cent as compared with 1913. Between these two periods, moreover, the eight-hour day became effective. During the latter part of 1926 and the beginning of 1927 wage increases to the amount of 7½ per cent were granted to certain transportation employees. These wage-rate changes were obtained under the operation of the railway labor act of 1926.

Labor cost per unit of service has decreased in recent years. In 1927 there was an increase over 1923 of nearly 4 per cent in volume of traffic handled (revenue ton-miles) as compared with a decrease of 6½ per cent in number of employees and a decrease of 3 per cent in total wages paid. This increased efficiency in operation has been due to the efforts of both management and men and to increased railway facilities, such as locomotive equipment of greater tractive power and the replacement of obsolete and inferior freight cars by new heavy-capacity equipment.

Table 12.—Employees of Railways: Number and Compensation

NOTE.—Beginning with 1910, data exclude switching and terminal companies. Average compensation per hour is calculated for all classes of employees, including those not paid on an hourly basis.

Year ended—	Average number of employees, all carriers	Average number of employees, Class I carriers	Total yearly compensation (1,000 dollars)[1]	Average compensation [1]	
				Per hour	Per year
June 30:					
1895	785,034	[2]	445,508	[2]	$568
1900	1,017,653	[2]	577,265	[2]	567
1905	1,382,196	[2]	839,945	[2]	608
1910	1,699,420	[2]	1,143,725	[2]	673
1913	[3] 1,830,839	1,759,020	1,338,612	[2]	761
Dec. 31:					
1916	1,700,814	1,647,097	1,468,576	$0.283	892
1917	[3] 1,787,576	1,732,876	1,739,482	.320	1,004
1918	[3] 1,897,748	1,841,575	2,613,813	.458	1,419
1919	[3] 1,969,757	1,913,422	2,843,128	.565	1,486
1920	[3] 2,080,247	2,022,832	3,681,801	.676	1,820
1921	[3] 1,704,862	1,659,513	2,765,218	.667	1,666
1922	1,669,640	1,626,834	2,640,817	.613	1,623
1923	1,902,222	1,857,674	3,004,072	.610	1,617
1924	1,795,493	1,751,362	2,825,775	.623	1,613
1925	1,786,411	1,744,311	2,860,600	.631	1,640
1926	1,821,804	1,779,275	2,946,114	.631	1,656
1927	[3] 1,778,788	1,737,342	2,910,945	.643	1,676

[1] Beginning with 1913, data are for Class I carriers.
[2] Data not available.
[3] Estimated from data for Class I and II roads in 1913 and for Class I roads other years.
Source: Interstate Commerce Commission.

FINANCES

Operating Results.

A summary of the operating finances of railway companies since 1890 appears in Table 13. As compared with the average for the period 1891 to 1895, the year 1927 showed operating revenues about five and one-half times, operating expenses six times, and net railway operating income over three times as large. Taxes in 1927 were almost eleven times the average for 1891 to 1895. The operating ratio advanced sharply during the war, but gratifying decreases have been brought about since 1920. The 1927 operating ratio was slightly higher than that for 1913–14.

Table 13.—Operating Finances of Railway Companies

NOTE.—In thousands of dollars. Data for 1927 relate only to Class I companies, the financial items for which, however, represent nearly 98 per cent of the total. Beginning with 1908, switching and terminal companies are excluded. See also Table 14.

Yearly average or year ended—	Operating revenues			Operating expenses	Operating ratio, per cent	Taxes	Net railway operating income [2]
	Total [1]	Freight	Passenger				
June 30:							
1891–1895	1,127,531	758,930	281,414	759,588	67.37	34,915	333.027
1896–1900	1,264,048	879,837	279,900	832,377	65.85	41,970	389,701
1901	1,588,526	1,118,543	351,356	1,030,397	64.86	46,708	511,421
1902	1,726,380	1,207,229	392,963	1,116,249	64.66	50,054	560,077
1903	1,900,847	1,338,020	421,705	1,257,539	66.16	53,252	590,056
1904	1,975,174	1,379,003	444,327	1,338,896	67.79	56,802	579,476
1905	2,082,482	1,450,773	472,695	1,390,602	66.78	58,712	633,168
1906	2,325,765	1,640,387	510,033	1,536,877	66.08	69,064	719,824
1907	2,589,106	1,823,652	564,606	1,748,516	67.53	73,743	766,846
1908	2,440,639	1,655,419	566,833	1,710,402	70.08	78,674	634,794
1909	2,473,205	1,677,614	563,609	1,650,034	66.72	85,140	710,474
1910	2,812,142	1,925,554	628,992	1,881,879	66.92	98,035	805,097
1911	2,852,855	1,925,951	657,638	1,976,332	69.28	102,657	744,669
1912	2,906,416	1,968,599	660,373	2,035,058	70.02	113,819	727,458
1913	[3] 3,193,118	[3] 2,198,931	[3] 695,988	[3] 2,235,923	[3] 70.02	[3] 122,005	[3] 805,266
1914	3,127,730	2,126,717	703,484	2,280,416	72.91	140,470	674,190
1915	2,956,193	2,037,926	646,475	2,088,683	70.65	137,775	694,276
Dec. 31:							
1916	3,691,965	2,631,092	722,359	2,426,251	65.73	161,825	1,058,506
1917	4,115,413	2,897,436	840,910	2,906,283	70.62	218,632	950,557
1918	4,985,290	3,522,052	1,046,166	4,071,522	81.67	229,533	646,223
1919	5,250,420	3,624,886	1,193,431	4,498,817	85.68	239,136	454,132
1920	6,310,151	4,420,833	1,304,815	5,954,394	94.36	289,272	12,101
1921	5,632,665	4,004,109	1,166,252	4,668,998	82.89	283,163	601,139
1922	5,674,483	4,085,742	1,087,516	4,509,991	79.48	308,145	769,411
1923	6,419,210	4,712,495	1,158,925	4,999,383	77.88	339,577	974,918
1924	6,045,252	4,437,380	1,085,672	4,608,807	76.24	347,437	984,463
1925	6,246,884	4,648,364	1,064,806	4,633,497	74.17	365,790	1,136,728
1926	6,508,679	4,905,981	1,049,210	4,766,235	73.23	396,538	1,229,020
1927 [4]	6,138,988	4,645,889	976,339	4,576,313	74.55	375,621	1,069,056

[1] Includes miscellaneous revenues from operation.
[2] Obtained by deducting from railway operating revenues the following items: Railway operating expenses, railway tax accruals, uncollectible railway revenues, and net equipment and joint facility rents.
[3] Class I and Class II roads.
[4] Class I roads.

Source: Interstate Commerce Commission.

The total operating revenues of Class I carriers in 1927 amounted to $6,139,000,000—3.8 per cent less than in 1926, but more than twice the average for 1912 to 1914. The operating revenues of all the districts showed decreases in 1927; the southern district showed the greatest decline, which amounted to 6.4 per cent.

The total operating expenses in 1927 were $4,576,000,000, or about 2 per cent less than in the preceding year. In all districts the decreases in operating revenues were greater than in operating expenses.

The operating ratio for Class I railways in 1927 was increased to 74.55 from 73.15 in 1926. This figure for 1927, although greater than for 1926 or the average for 1912 to 1914, was very much below the maximum of 94.36 per cent in 1920. The ratio for the southern district again was lower than for either of the other two districts.

Table 14.—Operating Finances of Class I Railways,[1] by Districts

[In millions of dollars]

Year [2]	Operating revenues				Operating expenses			
	Total	Eastern	Southern	Western	Total	Eastern	Southern	Western
1912–1914 (average)	2,982	1,324	451	1,207	2,112	970	325	817
1916	3,597	1,622	523	1,452	2,357	1,102	340	915
1917	4,014	1,785	606	1,623	2,829	1,339	412	1,078
1918	4,881	2,207	785	1,889	3,982	1,892	610	1,480
1919	5,145	2,282	806	2,057	4,400	2,023	704	1,673
1920	6,178	2,747	977	2,454	5,831	2,730	913	2,188
1921	5,517	2,461	877	2,179	4,563	2,083	740	1,740
1922	5,559	2,517	915	2,127	4,415	2,060	709	1,646
1923	6,290	2,943	1,038	2,309	4,895	2,330	801	1,764
1924	5,921	2,666	1,024	2,231	4,508	2,069	768	1,671
1925	6,123	2,755	1,107	2,261	4,537	2,084	794	1,659
1926	6,383	2,899	1,166	2,318	4,669	2,168	830	1,671
1927	6,139	2,760	1,091	2,288	4,576	2,098	798	1,680
Per cent change from 1926	−3.8	−4.8	−6.4	−1.3	−2.0	−3.2	−3.8	+0.5

Year	Net railway operating income [3]				Ratio of expenses to revenues (per cent)			
1912–1914 (average)	719	282	110	328	70.84	73.28	72.07	67.70
1916	1,040	417	167	456	65.54	67.97	65.02	63.01
1917	934	324	171	439	70.48	74.97	68.04	66.46
1918	639	192	139	308	81.58	85.76	77.76	78.30
1919	455	135	64	256	85.52	88.66	87.35	81.32
1920	17	[4] 124	32	109	94.32	99.29	93.42	89.12
1921	601	230	92	279	82.71	84.63	84.38	79.86
1922	760	292	150	318	79.41	81.85	77.43	77.38
1923	962	418	177	367	77.83	79.20	77.15	76.39
1924	974	408	195	371	76.14	77.60	74.93	74.90
1925	1,121	475	239	407	74.10	75.67	71.68	73.37
1926	1,213	515	253	445	73.15	74.77	71.22	72.10
1927	1,069	451	218	400	74.55	76.01	73.18	73.43
Per cent change from 1926	−11.9	−12.4	−14.0	−10.1				

[1] Excluding switching and terminal railways.
[2] Years ended June 30, 1912–1914; others, calendar years.
[3] Obtained by deducting from railway operating revenues the following items: Railway operating expenses, railway tax accruals, uncollectible railway revenues, and net equipment and joint facility rents.
[4] Deficit.

Source: Interstate Commerce Commission.

The net railway operating income for 1927 was $1,069,000,000—11.9 per cent less than in 1926 but 10 per cent greater than in 1924. The decreases in the three districts reflect the respective changes in the ratio of the expenses to the revenues. The western district showed a decrease of 10.1 per cent, the eastern 12.4 per cent, and the southern 14 per cent. The net railway operating income in 1927 was about 49 per cent greater than the average for the three fiscal years

ended June 30, 1914. It was derived, however, from gross operating revenues, which were more than double the pre-war figures.

The net railway operating income of Class I roads in 1927 was 5 per cent of the aggregate tentative valuation of the steam-railway property of the carriers subject to the transportation act of 1920. For the southern district the 1927 ratio was 6.1 per cent, for the eastern district 5.1 per cent, and for the western district 4.4 per cent.

In a general rate case in 1920 the aggregate tentative valuation of all railroads was taken as $18,900,000,000 by the Interstate Commerce Commission, of which $18,577,000,000 was the tentative valuation assumed to apply to Class I railways as of December 31, 1919. The tentative valuation for the latter in 1926, using the 1920 figures as the base, is $21,464,000,000, which is obtained by adding the increases in net investment in road and equipment. This valuation was distributed as follows: Eastern district, $8,859,000,000; southern district, $3,590,000,000; western district, $9,015,000,000.

Table 15.—Operating Revenues and Net Railway Operating Income, All Class I Railways, by Months

[In millions and tenths of millions of dollars]

Month	Operating revenues						Net railway operating income					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
January	395.8	502.5	469.0	485.0	481.4	487.0	29.6	61.1	51.4	66.1	65.8	61.6
February	401.6	446.9	479.5	455.2	460.8	469.0	47.7	39.3	71.6	65.2	63.4	70.0
March	475.2	535.8	505.4	486.7	531.5	531.1	83.5	84.1	80.3	73.4	94.7	94.9
April	417.1	523.3	475.2	473.7	500.5	498.4	50.0	83.5	62.3	66.5	75.9	73.6
May	449.4	548.1	477.5	489.0	518.0	518.6	62.1	90.3	60.9	76.2	88.1	85.7
June	474.0	541.3	465.7	507.0	541.4	517.0	76.3	88.3	65.8	92.1	107.4	87.4
July	443.8	536.3	481.8	522.5	557.9	509.4	69.3	84.9	74.4	99.7	117.0	84.4
August	474.1	564.5	508.5	555.5	580.3	557.4	52.2	98.9	95.7	124.9	133.0	118.2
September	500.9	546.1	541.0	565.6	591.2	565.1	58.7	92.5	117.0	134.5	145.8	132.8
October	550.3	587.9	572.9	591.5	610.4	580.5	85.1	103.8	127.2	138.0	146.4	133.8
November	523.6	532.0	505.9	533.0	562.3	503.8	83.2	86.8	93.4	107.0	114.9	86.4
December	513.6	494.6	505.2	524.1	527.7	467.6	79.0	70.0	86.7	94.6	80.1	55.3

Source: Interstate Commerce Commission.

Both the operating revenues of Class I carriers and the net railway operating income reached the peak of the year in October, 1927. January, February, and May were the only months in which the operating revenues of 1927 exceeded those of 1926. The net railway operating income was smaller than in 1926, except in February and March.

The net railway operating income for the eastern district was highest during August and September; in the southern district the net railway operating income for March, September, and October was approximately the same, being higher than in any other months of the year; in the western district the net railway operating income was highest during September and October.

Table 16.—Operating Revenues and Net Railway Operating Income, Class I Railways, by Districts

[In millions and tenths of millions of dollars]

Month	Eastern district				Southern district				Western district			
	1924	1925	1926	1927	1924	1925	1926	1927	1924	1925	1926	1927
Operating revenues:												
January	215.8	219.4	214.1	223.3	83.7	88.3	96.7	91.5	169.5	177.3	170.6	172.2
February	221.8	208.8	206.7	215.1	87.0	85.8	93.5	88.7	170.7	160.6	160.6	165.2
March	237.7	223.4	247.0	244.4	91.2	91.8	103.9	98.9	176.5	171.5	180.6	187.8
April	221.3	222.5	234.7	231.7	84.5	86.4	94.0	94.0	169.4	164.8	171.8	172.7
May	221.6	230.4	242.6	242.0	82.7	86.5	94.1	93.5	173.2	172.1	181.3	183.1
June	214.8	234.7	252.9	239.6	77.3	86.6	93.8	89.0	173.6	185.7	194.7	188.4
July	220.9	242.1	253.1	232.6	78.3	88.1	96.4	86.6	182.6	192.3	208.4	190.2
August	229.0	255.4	263.3	252.7	82.2	94.5	97.3	92.1	197.3	205.6	219.7	212.6
September	237.0	244.7	264.6	247.6	85.3	98.5	99.1	93.8	218.7	222.4	227.5	223.7
October	247.5	253.0	272.3	247.2	91.8	104.7	103.7	95.2	233.6	233.8	234.4	238.1
November	219.0	231.4	254.7	220.1	87.6	98.0	100.1	85.1	199.3	203.6	207.5	198.6
December	223.0	231.7	242.4	206.9	94.5	100.9	98.1	82.3	187.7	191.5	187.2	178.4
Net railway operating income:												
January	21.4	26.0	24.1	24.4	13.2	16.6	19.0	16.1	16.8	23.5	22.7	21.1
February	29.9	27.8	23.0	29.6	17.6	18.2	19.2	17.6	24.1	19.2	21.2	22.8
March	36.8	32.0	43.6	43.3	18.6	20.4	24.2	21.9	24.9	21.0	26.9	29.7
April	30.6	35.2	39.5	37.7	14.9	16.2	17.5	19.4	16.8	15.1	18.9	16.5
May	31.0	39.5	44.6	43.8	14.0	16.3	18.8	18.8	15.9	20.4	24.7	23.1
June	30.5	44.0	49.9	42.8	11.8	17.2	20.3	16.1	23.5	30.9	37.2	28.5
July	34.1	47.7	50.1	39.3	12.5	18.4	22.0	15.8	27.8	33.6	44.9	29.3
August	42.1	57.0	57.1	51.1	15.6	22.8	21.6	20.5	38.0	45.1	54.3	46.6
September	46.3	51.3	58.7	51.1	18.0	24.8	24.0	22.5	52.7	58.4	63.1	59.2
October	46.3	49.3	58.1	47.3	19.3	25.2	25.0	21.4	61.6	63.5	63.3	65.1
November	32.1	38.7	46.4	29.6	17.7	21.5	22.3	14.4	43.6	46.8	46.2	42.4
December	32.5	35.6	29.7	18.2	21.8	22.0	19.7	13.7	32.4	37.0	30.7	23.4

Source: Interstate Commerce Commission.

Distribution of Operating Revenues.

Of $6,139,000,000 total operating revenues of Class I railways in 1927, $2,685,000,000 (excluding items for labor chargeable to capital account), or 43.7 per cent, was spent for labor, compared with 42.6 per cent in 1926, 55.4 per cent in 1920, and 40.1 per cent in 1913. Although wage rates of certain classes of railroad employees have been increased since 1922 the tonnage handled per employee has risen, and the ratio of labor expenditures to total operating revenues has consequently decreased.

A total of $2,010,000,000, or 32.7 per cent of the operating revenues, was spent for fuel, material, supplies, and other expenses. Taxes required $375,000,000, or 6.1 per cent of the total operating revenues, in 1927, as compared with 6.1 per cent in 1926 and 4.4 per cent in 1920. In only one year since 1920 has the ratio of taxes to total operating revenues shown a decrease, and between 1920 and 1927 the actual taxes increased $103,000,000. In 1927 there remained 17.4 per cent, or $1,069,000,000, of the total operating revenues as net railway operating income with which to pay fixed charges on bonded debts and returns on other capital employed.

Table 17.—Distribution of Operating Revenues of Class I Railways [1]

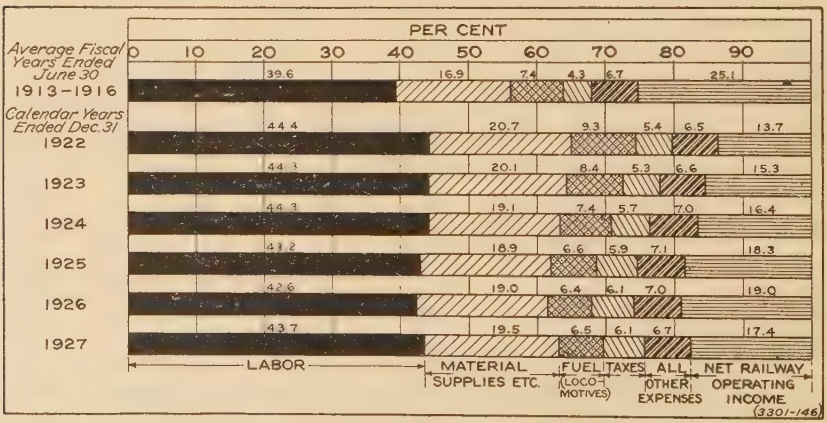
[In millions of dollars]

Year	Total operating revenues	Expense items					Net railway operating income	Per cent of total operating revenues		
		Labor [2]	Fuel (locomotive)	Material, supplies, etc. [3]	Taxes	All other expenses		Labor	Taxes	Net railway operating income
1913 [4]	3,108	1,245	242	526	118	189	788	40.1	3.8	25.3
1916	3,597	1,366	251	551	157	232	1,040	38.0	4.4	28.9
1917	4,014	1,618	394	612	214	243	934	40.3	5.3	23.3
1918	4,881	2,431	500	822	223	266	639	49.8	4.6	13.1
1919	5,145	2,644	474	1,002	233	337	455	51.4	4.5	8.8
1920	6,178	3,424	675	1,367	272	424	17	55.4	4.4	.3
1921	5,517	2,590	524	1,134	276	392	601	46.9	5.0	10.9
1922	5,559	2,468	518	1,150	301	361	760	44.4	5.4	13.7
1923	6,290	2,785	529	1,266	332	415	962	44.3	5.3	15.3
1924	5,921	2,625	437	1,132	340	413	974	44.3	5.7	16.4
1925	6,123	2,646	407	1,158	359	432	1,121	43.2	5.9	18.3
1926	6,383	2,718	407	1,212	389	444	1,213	42.6	6.1	19.0
1927	6,139	2,685	(5)	(5)	375	(5)	1,069	43.7	6.1	17.4

[1] Excludes switching and terminal companies.
[2] Excludes that portion of pay roll chargeable to capital account.
[3] Includes uncollectible railway revenues.
[4] Fiscal year ended June 30; others, calendar years.
[5] Three items amounting to $2,010,000,000 not available in detail.

Source: Compiled by Bureau of Railway Economics from reports of Interstate Commerce Commission.

Chart VI.—DISTRIBUTION OF OPERATING REVENUE, CLASS I ROADS



Railway Capital and Dividends.

The total amount of railway capital actually outstanding increased from $19,029,000,000 on June 30, 1913, to approximately $22,000,000,000 on December 31, 1927. The data in Table 18 are from reports of the Interstate Commerce Commission, except those for 1927, which are estimated by adding all new railroad issues during the year. The ratio of funded debt to total railway capital increased rather regularly from 1919 to 1924, but has since shown little change.

Table 18.—Railway Capital Actually Outstanding

NOTE.—In millions of dollars. Excludes securities held by or for the issuing company but not those held by other railway companies. Switching and terminal roads not included, but nonoperating as well as operating companies are included.

Year	Total railway capital	Funded debt	Stock	Per cent of debt to capital	Year	Total railway capital	Funded debt	Stock	Per cent of debt to capital
June 30:					Dec. 31—Contd.				
1908	16,199	8,898	7,301	54.9	1918	19,453	10,607	8,847	54.5
1910	17,774	9,764	8,011	54.9	1919	19,539	10,656	8,883	54.5
1912	18,989	10,437	8,552	55.0	1920	20,098	11,255	8,843	56.0
1913	19,029	10,429	8,600	54.8	1921	20,248	11,358	8,890	56.1
1914	19,401	10,747	8,654	55.4	1922	20,464	11,502	8,962	56.2
1915	19,720	11,085	8,635	56.2	1923	21,058	11,965	9,093	56.8
1916	19,681	10,938	8,743	55.6	1924	21,681	12,381	9,300	57.1
Dec. 31:					1925	21,734	12,321	9,413	56.7
1916	19,631	10,875	8,775	55.4	1926	21,749	12,384	9,365	56.9
1917	19,765	10,761	9,004	54.5	1927 [1]	21,907	12,457	9,450	56.9

[1] Estimated from unofficial sources.

Source: Interstate Commerce Commission.

Dividends declared in 1926, $473,683,000 (data for 1927 not available), were greater than in any of the previous years. The percentage of stock which paid dividends, however, was also greater than in any earlier year. The average rate on dividend-yielding stock was lower than in 1921, as was the ratio of dividends on all stock, but both were greater than in any other recent year. (Table 19.)

Table 19.—Dividends of Railways

NOTE.—Nonoperating as well as operating roads are included. Switching and terminal roads are excluded beginning with 1908.

Year ended—	Per cent of stock paying dividends	Dividends declared (1,000 dollars)	Average rate on dividend-yielding stock	Ratio of dividends declared to all stock	Year ended—	Per cent of stock paying dividends	Dividends declared (1,000 dollars)	Average rate on dividend-yielding stock	Ratio of dividends declared to all stock
June 30:					June 30—Contd.				
1891–1895 [1]		94,093	5.42		1914	64.39	451,653	7.97	5.13
1896–1900 [1]		104,295	5.27		1915	60.45	328,478	6.29	3.80
1901	51.27	156,736	5.26	2.70	Dec. 31:				
1902	55.40	185,392	5.55	3.08	1916	62.02	366,561	6.75	4.19
1903	56.06	196,728	5.70	3.20	1917	62.32	381,852	6.81	4.24
1904	57.47	221,941	6.09	3.50	1918	58.09	339,186	6.60	3.83
1905	62.84	237,964	5.78	3.63	1919	59.64	335,242	6.33	3.77
1906	66.54	272,796	6.03	4.01	1920	57.30	331,103	6.52	3.74
1907	67.27	308,089	6.23	4.19	1921	56.92	456,482	9.02	5.13
1908	65.69	390,695	8.07	5.30	1922	59.38	338,806	6.37	3.78
1909	64.01	321,072	6.53	4.18	1923	62.09	411,882	7.30	4.53
1910	66.71	405,771	7.50	5.00	1924	64.97	385,130	6.37	4.14
1911	67.65	460,195	8.03	5.42	1925	66.70	409,645	6.52	4.35
1912	64.73	400,315	7.17	4.64	1926	69.12	473,683	7.32	5.06
1913	66.14	369,078	6.37	4.22					

[1] Annual average.

Source: Interstate Commerce Commission.

New Financing.

The volume of railway securities issued in 1927 was two and one fourth times as large as in 1926, totaling $962,806,000. New securities constituted 53 per cent of the total issue. Long-term bonds and notes amounted to $767,511,000, or 80 per cent of the total value of securities issued during the year.

Table 20.—Railroad Securities Issued: 1920–1927

[In thousands of dollars]

Item	1920	1921	1922	1923	1924	1925	1926	1927
All classes of securities	377,880	655,288	651,531	518,249	940,297	514,709	422,583	962,806
New	322,380	352,666	523,808	464,516	779,617	380,281	345,991	505,666
Refunding	55,500	302,623	127,724	53,733	160,680	134,428	76,592	457,140
Long-term bonds and notes	356,380	638,793	589,211	471,840	809,084	473,591	351,738	767,511
New	302,380	336,671	464,488	427,956	667,404	339,563	297,146	395,057
Refunding	54,000	302,123	124,724	43,883	141,680	134,028	54,592	372,453
Short-term bonds and notes	21,500	16,495	35,352	19,088	75,250	24,900	30,000	20,150
New	20,000	15,995	32,352	9,238	56,250	24,500	8,000	19,500
Refunding	1,500	500	3,000	9,850	19,000	400	22,000	650
Stocks (all new)			26,968	27,322	55,963	16,218	40,845	91,108

Source: Commercial and Financial Chronical.

Foreclosures and Receiverships.

The mileage operated by receivers at the end of 1927 totaled 16,622 as compared with 17,711 in 1926. According to compilations made by the Railway Age, the number of roads in receivers' hands at the close of 1927 was 37, which was 5 less than in 1926. Six companies went into receivership during the year. The mileage operated by receivers during 1927 was less than at the end of 1926, but, on account of the inclusion of the Chicago, Milwaukee & St. Paul, it was larger than for any year since 1918, with the exception of 1925 and 1926.

Foreclosure sales covered 6,151 miles in 1922, 637 in 1923, 3,992 in 1924, 638 in 1925, 12,852 in 1926, and 142 in 1927; the figure for 1927 is lower than any year since 1908. The sales in 1927 comprised 5 companies, while those in 1926 were for 12 companies.

Regional Consolidations.

Negotiations and plans for consolidation have been under way, although little actual progress toward unification of the carriers into a few large systems has been made. During the 12 months ended October, 1926, 48 applications, comprehending 6,328 miles, for authorization of one carrier to obtain control of another were granted. During the 12 months ended October, 1927, 55 applications, comprehending 7,106 miles, were granted.

Among the most important of the bills introduced in the Seventieth Congress have been those dealing with the consolidation of railroads. No action, other than hearings, however, has resulted thus far regarding further consolidation legislation.

PLANT AND EQUIPMENT

New Motive Power and Rolling Stock.

In 1927, 24 per cent fewer railway cars were placed in service than in the previous year; the figure for 1927 was 71,040, just about one-half that for 1925. New motive-power installations increased slightly over 1925 and 1926, although less than in preceding years. The large additions of equipment in 1923 and the more efficient handling of existing equipment made large purchases unnecessary during the past three years. Further data are given on railway locomotives and cars in the section on Machinery.

Table 21 shows installations and retirements of locomotives and freight cars for Class I roads since 1913 and the number and capacity of those in service at the end of each year. While the number of new cars annually installed has decreased since 1923, the aggregate capacity of cars in service has increased. The actual number in service in 1927 was about 62,723 less than in 1926. Fewer locomotives also were used. The average tractive capacity, however, was considerably greater than a few years ago.

Table 21.—Locomotive and Freight-Car Equipment of Class I Railways

Year [1]	Locomotives					Freight-train cars				
			In service						Capacity	
	Number installed	Number retired	Number	Tractive power [2]		Number installed	Number retired	Number in service	Aggregate (1,000 tons)	Average (tons)
				Aggregate (million pounds)	Average (lbs.)					
1913	4,381	2,338	61,172	1,803	29,956	162,670	96,825	2,237,446	86,978	[3] 38.3
1914	3,245	1,862	62,533	1,887	30,705	150,813	96,985	2,291,750	90,977	[3] 39.1
1915	1,114	1,507	62,125	1,970	31,840	86,012	90,347	2,286,792	39,838	40.0
1916	1,986	2,217	61,332	2,024	33,188	126,851	106,272	2,280,955	92,280	41.0
1917	2,148	1,423	61,890	2,088	33,932	117,210	62,253	2,330,123	95,467	41.5
1918	2,803	977	63,889	2,223	34,995	65,249	56,024	2,354,244	96,767	41.6
1919	2,062	999	64,983	2,313	35,789	76,019	43,274	2,389,860	99,001	41.9
1920	1,017	1,254	64,746	2,341	36,365	36,044	75,197	2,350,707	98,343	42.4
1921	1,330	1,130	64,949	2,385	36,935	63,406	69,245	2,344,780	98,504	42.5
1922	1,226	1,682	64,512	2,401	37,441	105,394	126,471	2,332,286	98,847	43.1
1923	4,360	3,746	65,327	2,544	39,177	232,060	213,789	2,345,591	101,318	43.8
1924	2,786	2,529	65,358	2,593	39,891	156,572	118,590	2,379,096	104,149	44.3
1925	1,600	2,873	63,974	2,587	40,666	139,083	128,573	2,387,551	105,570	44.8
1926	1,882	3,105	62,761	2,611	41,886	93,369	103,152	2,378,947	105,953	45.1
1927 [4]	1,955	3,572	60,845	2,597	42,674	71,040	91,435	2,316,224	105,790	45.7

[1] Years ended June 30 to 1915, inclusive, thereafter calendar years.
[2] Exclusive of electric locomotives.
[3] Includes both Class I and Class II.
[4] 1927 data from American Railway Association.
Source: Interstate Commerce Commission.

Condition of Equipment.

The ratio of unserviceable cars to the total number of freight cars for the year 1927 was 5.9 per cent and the corresponding ratio for freight and passenger locomotives was 16.2 per cent. These ratios are lower than for any previous year, comparing favorably with 6.5

and 16.6 per cent, respectively, for 1926, and closely approaching the 5 per cent for unserviceable freight cars and 15 per cent for unserviceable locomotives, set as a goal by the railway executives. In January, March, and April, 1927, the percentage of unserviceable freight cars dropped to 5.6. per cent; in September, 1927, that for unserviceable locomotives dropped to 15.2 per cent.

During 1921 and 1922 the proportion of unserviceable equipment was extremely high, reaching 15.5 per cent for freight cars during two months in 1921 and 28.9 per cent for locomotives at one time in 1922. The small percentage of locomotives and cars awaiting repair is one of the causes of the greater efficiency in handling traffic.

Table 22.—Percentage of Unserviceable Freight Cars and Locomotives

Month	Percentage of unserviceable freight cars						Percentage of unserviceable locomotives					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
Monthly average	**12.8**	**8.0**	**7.8**	**7.7**	**6.5**	**5.9**	**24.9**	**21.4**	**18.7**	**17.8**	**16.6**	**16.2**
January	13.5	9.0	6.7	8.0	6.6	5.6	23.4	25.6	18.8	18.8	17.1	16.6
February	14.0	8.8	7.0	7.8	6.7	5.7	23.7	24.8	19.0	18.8	17.3	16.8
March	13.8	8.8	7.1	7.8	6.7	5.6	23.4	24.4	19.2	18.9	17.6	17.0
April	13.6	8.8	7.4	7.9	6.7	5.6	23.2	23.6	19.1	18.5	17.5	16.9
May	14.1	8.9	7.7	8.1	6.8	5.9	22.7	22.4	18.8	18.0	17.0	16.6
June	14.0	8.6	8.0	8.3	6.9	6.1	21.5	21.5	18.6	17.7	16.6	16.4
July	14.2	8.1	8.4	8.2	7.0	6.2	24.2	21.0	18.5	17.3	16.1	15.8
August	14.0	7.8	8.6	8.1	7.0	6.2	27.8	19.6	18.3	17.1	16.1	15.7
September	12.6	7.3	8.7	7.8	6.6	6.0	28.9	18.6	18.3	17.1	15.8	15.2
October	11.4	6.6	8.2	7.1	6.2	5.9	27.6	18.2	18.4	17.2	15.8	15.5
November	9.8	6.6	7.8	6.9	5.8	5.9	26.5	18.5	18.5	17.2	16.3	16.2
December	9.1	6.6	7.9	6.8	5.5	5.9	25.7	18.5	18.4	16.9	16.0	15.6

Source: Compiled by Bureau of Railway Economics from Interstate Commerce Commission reports.

Railway Construction.

The total track mileage (including first, second, third, and other track) built during 1927 was 1,253 miles, as compared with 1,527 miles in 1926, 1,354 in 1925, 1,114 miles in 1924, and was more than double that for each of the three years preceding 1923. The mileage of the new first track, representing extension of lines, was 226 miles less than in 1926, but greater than in the preceding years, and accounted for approximately two-thirds of the total new mileage. The Railway Age records new track (in miles) built in the United States as shown in the following table:

Year	First track	Second track	Third track	Fourth track or more	Total
1924	578.95	456.12	51.22	25.88	1,113.77
1925	643.53	682.46	18.86	9.55	1,354.40
1926	1,004.72	472.53	29.12	20.26	1,526.63
1927	778.76	446.08	17.91	10.49	1,253.24

Of the first track built in 1927, Florida, with 124 miles, accounted for the greatest mileage, while Mississippi ranked second with 105 miles. Approximately one-fourth of the second track constructed was in Ohio.

The total length of line abandoned in 1927 was 282 miles, as compared with 457 miles during 1926, 606 miles in 1925, 693 in 1924, and 513 in 1923. It is interesting to note that the mileage of new lines built exceeded the mileage abandoned by a considerable margin. Aside from trackage, miscellaneous construction, including new yards and engine terminals, track elevation and grade separation, station buildings, and bridge renewals and strengthening, account for large sums expended in 1927.

Track newly equipped for electric operation in 1927, according to the Electric Railway Journal, amounted to 141 miles, which was 17 per cent below the figure for 1926 and 40 per cent below that for 1925. However, the figure for 1927 exceeded the entire electrification for the five years preceding 1925.

Signal and Train Control Construction.

Interlocking and signal construction was more active in 1927 than in any previous year. More equipment was placed in service than in 1926 or the peak pre-war year, 1913. During 1927 the installation of automatic block signals completed in the United States and Canada covered 5,127 miles of road, showing an increase over the 4,993 miles equipped in 1926, which was the maximum program undertaken in the past 11 years. According to the Railway Age, installations of automatic signals in Canada and the United States during 1927 totaled 7,102 light signals and 2,495 semaphores. This was the second time the number of light signals exceeded the semaphores to a large extent. For the first time in a number of years alternating-current signaling has been installed. In 1927, 1,623 miles of road were equipped with this type of signaling.

There were 142 new interlocking plants constructed in the United States and Canada in 1927, as compared with 107 in 1926 and 92 in 1925. In addition to the new plants, 586 interlockings were rebuilt, requiring new machines and other equipment.

With the exception of the controls of one road, all of the installations of automatic train control required under the first order of the Interstate Commerce Commission were actually placed in service prior to July 1, 1927. Thirty-two of the 36 installations under the second order are now effective.

LEGISLATION

No important piece of legislation affecting interstate commerce has been enacted in the Federal Congress since the adjournment of the Sixty-ninth Congress. Several important legislative questions,

however, have been introduced into the Seventieth Congress and have been given consideration. Among the most important of these are bills dealing with the consolidation of railroads and the regulation of motor transportation in interstate commerce. A large number of other bills have been before Congress, and on some of them hearings have been held but no action has been taken.

Among the important questions raised by proposed legislation are the taking away from the Interstate Commerce Commission of the power to determine minimum rates; the increase in capitalization and extension of the service of the Inland Waterways Corporation; the abolition of the Pullman surcharge; modification of section 15A of the transportation act, dealing with the adjustment of rates so that the carriers will earn a fair return upon the aggregate value of their property and the disposition of the excess over a fair return, known as the recapture clause; and issuance of certificates of convenience and necessity by States, which provide that no railroad shall extend, construct, or acquire a new line without first obtaining from the commission a certificate that the public convenience and necessity requires this expansion; and in like manner that no line or road shall be abandoned without such a certificate.

Senate Resolution 334, which requested the Interstate Commerce Commission to prepare a manuscript covering the text of the various acts administered by it, has not yet been fully complied with by the commission. It is expected that the work will be completed during the present year.

PACKING

The year has been marked by increasing interest in developing facilities to eliminate unnecessary loss in the distribution of commodities. While it is impossible to estimate accurately the toll of such wastes, the loss and damage accounts of the railway and express companies serve as a barometer of the importance of this item. Modern marketing methods and mass production tend toward standardization, and the introduction of "factory packing," which has been brought about especially by the development of chain stores and which has been extended into other lines, has made for improved containers designed for individual requirements as well as efficient and economical mechanical handling of merchandise.

Railway Loss and Damage Claims.

For the first time since 1920 the railroads of the United States and Canada in 1927 failed to show a decrease as compared with the previous year in loss and damage accounts. In 1927 the railroads paid out $38,713,000 for loss and damage, which was 1.4 per cent more than in 1926. This slight increase may be partly explained by the floods during the past year in New England and the Mississippi Valley. While the carriers are exempt from liability from direct loss arising from such causes, it is possible that they were called upon to pay border claims where cause could not be accurately determined

Table 23.—Freight Loss and Damage Account, United States and Canada

Item	1923	1926	1927	Per cent change, 1927 from 1926
Rough handling	$8,895,212	$9,624,342	$10,342,269	+7.5
Unlocated damage	7,707,947	7,538,047	7,960,407	+5.6
Delay	6,707,595	3,380,936	3,518,613	+4.1
Defective equipment	5,537,977	3,047,299	2,939,720	−3.5
Wreck	3,516,249	2,623,718	2,603,309	−.8
Loss entire package	4,002,221	2,531,459	2,139,057	−15.5
Concealed damage	1,791,862	2,420,105	2,673,474	+10.5
Other unlocated loss	2,874,582	1,873,822	1,739,142	−7.2
Error of employee	1,123,391	920,686	912,480	−.9
Improper handling, etc	940,676	831,755	816,115	−1.9
Robbery entire package	1,473,279	738,940	694,355	−6.0
Improper refrigeration and ventilation	1,488,871	735,369	669,040	−9.0
Freezing or heater failure	892,667	724,599	764,089	+5.4
Other robbery	1,644,205	575,561	456,781	−20.6
Fire	399,204	319,416	216,802	−32.1
Concealed loss	544,439	301,261	267,406	−11.2
Carload (total)	34,421,861	27,503,678	28,443,175	+3.4
Less than carload (total)	15,118,516	10,683,637	10,269,884	−3.9
Grand total	49,540,377	38,187,315	38,713,059	+1.4

Source: American Railway Association.

The item of robberies of freight was less in 1927 than in any year since figures were first compiled. Losses from robbery amounted to $1,151,000, a decrease of $163,000 below the previous year (1926) and a reduction of $11,575,000 below the year 1920, when robbery losses were the greatest in the history of railroads. Efficient policing, expediting movement of freight cars, and installation of flood-lighting systems in railway yards, as well as the extension of the use of pilfer-proof devices and box strapping, are responsible to a great extent for these results.

Other items showing decreases from 1926 were damages arising from fire, concealed loss, loss of entire package, improper refrigeration and ventilation, defective equipment, and concealed loss. Delay and freezing and heating failures were items which showed slight increases over 1926 figures.

Chart VII, based on statistics compiled by the Bureau of Railway Economics, shows the part of each dollar of revenue freight paid to shippers for loss and damage claims. In 1927 the ratio increased as compared with 1926 and was the same as in 1925.

Chart VIII shows the distribution of each claim dollar among the commodities carried by the railroads, subdivided between carload and less-than-carload losses. As in previous years, claims paid for fruit and vegetable damages amounted to nearly 25 per cent of the total.

Loss and Damage Accounts of Express Companies.

The following figures show the loss and damage claims paid by the express companies of the United States during the past nine years:

1919	$18,800,002	1924	$4,345,909
1920	22,308,683	1925	4,285,973
1921	13,224,593	1926	4,619,237
1922	5,225,146	1927	3,861,719
1923	5,427,779		

Chart VII.—PERCENTAGE OF FREIGHT REVENUE PAID FOR LOSS AND DAMAGE

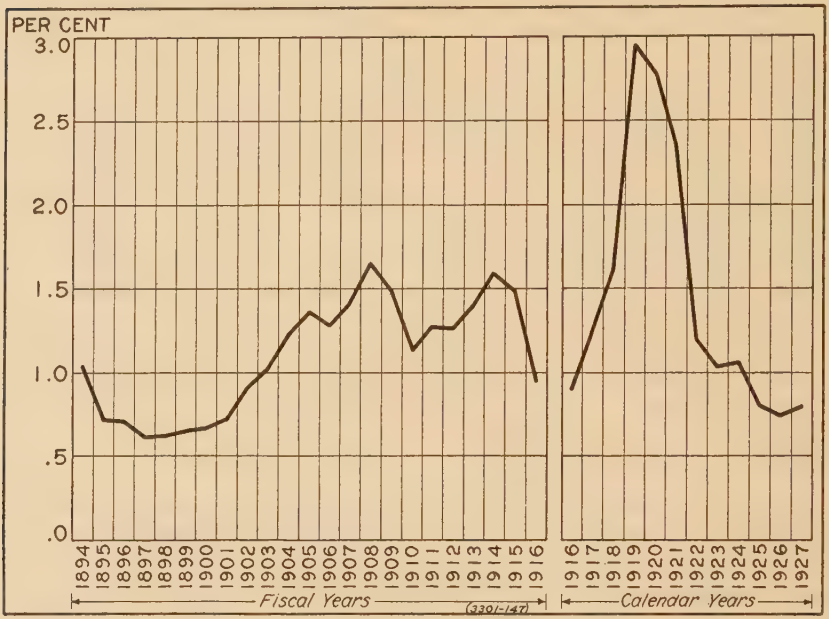
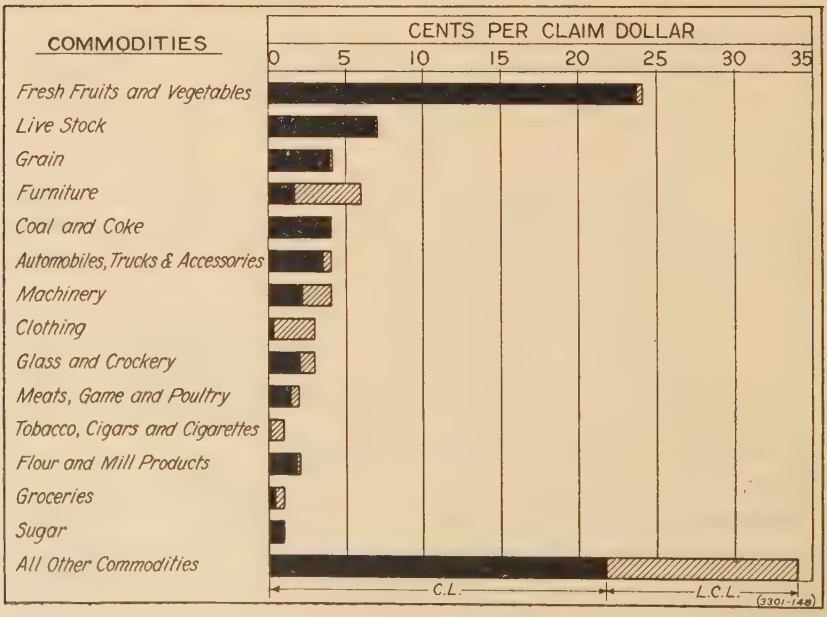


Chart VIII.—DISTRIBUTION OF THE CLAIM DOLLAR, BY COMMODITIES, BY CARLOAD AND LESS-THAN-CARLOAD LOSSES, 1927



The reduction in loss and damage claims paid by the express companies has been even more marked than that of the railroads. While the movement of merchandise by express has greatly increased, the figures for 1927 represent a reduction of more than 80 per cent in claim payments as compared with 1920.

New Methods of Packing and Handling.

An outstanding development during the past year was the inauguration of a method of shipping automobiles abroad unboxed. During the year thousands of cars were shipped to Europe with practically no damage in handling or transit. The ships used were of regular design, altered to accommodate cargo of this kind. It is expected that during the current year new ships designed and constructed for this particular trade will be placed in service and that the practice of carrying automobiles unboxed will be extended to other parts of the world.

The Bureau of Foreign and Domestic Commerce in 1927 completed its survey of domestic packing and issued two additional bulletins on the subject. The various container associations have continued to carry on laboratory tests designed to improve shipping containers, and the American Railway Association has contributed a number of valuable studies during the past year on loss and damage in transportation.

The National Committee on Wood Utilization has continued its studies on wood containers. The committee inaugurated during the year a study on the utilization of secondhand containers for purposes other than shipping merchandise. It is expected that this study will result in the withdrawal from traffic of many used containers which, as a rule, are unsuitable for further use in transportation.

MOTOR TRANSPORTATION

The United States in 1927 had within its confines approximately 20,280,000 passenger automobiles, 2,897,000 trucks, 86,000 motor busses, and 124,000 motor cycles, including tax-exempt official vehicles. The number of automotive vehicles increased over 5 per cent in 1927, as compared with 1926, and was larger than in any previous year. (Table 25.)

The increase in registrations of motor cars during 1927 was fairly evenly divided among the various States; however, the District of Columbia recorded only a very slight increase, while Arkansas showed a slight decrease. (Table 24.)

The commercial use of motor vehicles is steadily expanding in the United States. Motor busses are serving towns and communities which would otherwise be out of immediate touch with any rapid transportation service. The use of the motor truck is also being extended, and trucks are being employed to a great extent as auxiliaries to railways.

Table 24.—Motor Vehicle Registrations: Passenger Cars and Motor Trucks Combined, by States

NOTE.—Net number of cars and trucks shown when possible, excluding reregistrations and nonresident registrations. Totals in this table do not include those official cars which are exempt (or partially exempt) from paying regular registration fees to the States.

Division and State	1920 [1]	1926	1927			
			Total number of motor vehicles	Number per 1,000 population	Passenger cars, taxis, and busses	Motor trucks and road tractors
United States	**9,231,941**	**22,001,393**	**23,127,315**	**195**	**20,230,429**	**2,896,886**
New England	573,321	1,378,721	1,432,801	175	1,241,379	191,422
Maine	62,907	151,486	163,623	206	132,927	30,696
New Hampshire	34,680	89,001	96,009	211	83,415	12,594
Vermont	31,625	74,063	79,527	226	73,308	6,219
Massachusetts	274,498	690,190	694,107	164	614,359	79,748
Rhode Island	50,477	110,746	118,014	168	98,861	19,153
Connecticut	119,134	263,235	281,521	172	238,509	43,012
Middle Atlantic	1,474,106	3,922,033	4,205,229	169	3,565,593	639,636
New York	676,205	1,815,434	1,937,918	170	1,624,535	313,383
New Jersey	227,737	651,415	712,396	190	586,510	125,886
Pennsylvania	570,164	1,455,184	1,554,915	160	1,354,548	200,367
East North Central	2,229,396	5,404,142	5,676,418	231	4,934,758	741,660
Ohio	621,390	1,480,246	1,570,734	234	1,374,402	196,332
Indiana	333,067	772,326	813,637	258	697,359	116,278
Illinois	568,924	1,370,503	1,438,985	197	[2] 1,254,421	[2] 184,564
Michigan	412,717	1,118,785	1,154,773	257	[2] 998,781	[2] 155,992
Wisconsin	293,298	662,282	698,289	239	609,795	88,494
West North Central	1,782,946	3,167,938	3,239,370	246	2,912,492	326,878
Minnesota	324,166	630,285	646,682	241	565,401	81,281
Iowa	437,378	698,998	704,203	290	649,309	54,894
Missouri	297,008	654,554	682,419	194	610,303	72,116
North Dakota	90,840	157,822	160,701	251	144,830	15,871
South Dakota	120,395	168,230	169,552	244	153,019	16,533
Nebraska	219,000	366,773	373,912	268	[2] 342,357	[2] 31,555
Kansas	294,159	491,276	501,901	275	447,273	54,628
South Atlantic	806,053	2,204,899	2,338,668	147	2,073,725	264,943
Delaware	18,300	44,834	47,124	194	38,037	9,087
Maryland	102,841	252,852	270,935	170	265,768	5,167
District of Columbia	34,161	111,497	111,680	207	98,162	13,518
Virginia	115,470	322,614	337,607	133	288,666	48,941
West Virginia	80,664	227,836	245,819	145	217,689	28,130
North Carolina	140,860	[3] 385,047	[3] 430,499	149	390,223	40,276
South Carolina	93,843	181,189	199,635	108	179,571	20,064
Georgia	146,000	277,468	300,635	95	262,630	38,005
Florida	73,914	401,562	394,734	290	332,979	[4] 61,755
East South Central	357,658	992,326	1,041,770	111	932,850	108,920
Kentucky	112,683	281,557	285,621	113	255,892	29,729
Tennessee	101,852	279,639	294,567	119	269,086	25,481
Alabama	74,637	225,930	243,539	96	211,633	31,906
Mississippi	68,486	205,200	218,043	122	196,239	21,804
West South Central	772,655	1,998,726	2,076,101	178	1,824,697	251,404
Arkansas	59,082	209,419	206,568	107	174,524	32,044
Louisiana	73,000	239,500	255,000	132	216,000	39,000
Oklahoma	212,880	499,938	503,126	211	437,776	65,350
Texas	427,693	1,049,869	1,111,407	206	996,397	115,010
Mountain	374,473	735,286	794,608	198	715,275	79,333
Montana	60,650	103,958	112,735	158	94,733	18,002
Idaho	50,861	94,760	101,336	190	91,306	10,030
Wyoming	23,926	49,883	51,955	216	45,539	6,416
Colorado	129,255	248,613	268,492	250	245,107	23,385
New Mexico	22,100	54,996	59,291	151	57,643	1,648
Arizona	34,601	73,682	81,047	177	79,802	1,245
Utah	42,616	85,380	[5] 93,976	180	80,731	13,245
Nevada	10,464	24,014	25,776	335	20,414	5,362
Pacific	861,333	2,197,322	2,322,350	337	2,029,660	292,690
Washington	173,920	363,279	384,583	246	326,667	57,916
Oregon	103,790	233,568	244,572	275	223,582	20,990
California	583,623	1,600,475	1,693,195	382	[2] 1,479,411	[2] 213,784

[1] Does not include road tractors.
[2] Busses included with trucks.
[3] Fiscal registration year ends June 30; figures represent registration July 1 to Dec. 1.
[4] Trailers (1,000 estimated) excluded from trucks.
[5] Preliminary data.

Sources: Bureau of Public Roads and Bureau of the Census.

Table 25.—Motor Vehicle Registration [1]

Country and year	Grand total	Number per 1,000 population	Passenger cars, taxis, and busses	Motor trucks and road tractors [2]
United States:				
1914	1,711,339	17	(3)	(3)
1916	3,512,996	35	(3)	(3)
1918	6,146,617	59	(3)	(3)
1920	9,231,941	87	8,225,859	1,006,082
1921	10,463,295	96	9,483,391	979,904
1922	12,238,375	111	10,959,571	1,278,804
1923	15,092,177	135	13,539,608	1,552,569
1924	17,593,677	155	15,460,649	2,133,028
1925	19,937,274	173	17,496,420	2,440,854
1926	22,001,393	188	19,237,171	2,764,222
1927	23,127,315	195	20,230,429	2,896,886

[1] Includes passenger automobiles, taxis and cars for hire, and busses; and the commodity carrying or nonpassenger motor vehicles, which include motor trucks and road tractors (excluding farm tractors), but exclude tax-exempt official cars.
[2] Previous to 1924 excludes road tractors.
[3] Not shown separately.
Source: Bureau of Public Roads, Department of Agriculture.

INLAND WATERWAYS

Aggregate River and Canal Transportation.

The total tonnage carried by our inland waterways, including the navigable rivers and canals, aggregated approximately 217,000,000 tons in 1926, which was 6 per cent more than in 1925. The tonnage passing through the Detroit River, connecting Lakes Huron and Erie, was 95,003,604 tons, of which 9,300,000 tons was local traffic. The navigable rivers of the United States accounted for 127,421,000 tons of commerce, excluding through traffic of the Detroit River and all other known duplication of cargo. This was an increase of approximately 9,127,000 tons of traffic over 1925. These figures are compared with the volume of traffic by other channels of transportation (so far as possible eliminating duplication of tonnage by any one means of transport, but not that between different means) in the following table:

Item	1924	1925	1926
	Thousand tons	*Thousand tons*	*Thousand tons*
Tonnage originating on railways	1,287,000	1,351,000	1,440,000
Overseas foreign commerce	82,118	81,808	100,274
Great Lakes trade, eliminating trade between the United States and Canada	83,292	99,916	103,760
Trade between United States and Canada via Great Lakes	12,930	12,820	13,195
United States coastwise ocean-borne commerce (excluding Great Lakes and Panama Canal)	67,678	84,416	85,504
Total of navigable rivers and canals (excluding all known duplication)	173,190	204,569	217,000
River transportation in the United States (excluding transit tonnage of Detroit River)	102,432	118,294	127,421
Canal transportation in the United States	92,290	109,410	116,210
Sault Ste. Marie	72,037	81,875	85,679
Panama Canal (intercoastal traffic only)	11,327	9,460	10,922

Great Lakes to Ocean Waterways.

There have been no new developments in the United States relative to the Great Lakes waterways since the investigations which were completed during 1926. The 1927 and 1928 correspondence between

the Governments of Canada and the United States in regard to these waterways has been published. This includes the report of the Canadian National Advisory Committee, with observations by certain members, and includes also the orders in council referring certain questions of rights to the Supreme Court of Canada. The conclusions of the United States-St. Lawrence Commission, of the joint board of engineers, and of the economic survey made by the Department of Commerce, all favorable to St. Lawrence improvement, were summarized in Commerce Yearbook, 1926, page 609.

Great Lakes Traffic.

Traffic moving through the canals at Sault Ste. Marie, which includes a very large part of the Great Lakes commerce, in 1927 was 83,354,000 tons of cargo, a decrease of 2.7 per cent as compared with the preceding year and 8.8 per cent less than in 1923. The decline between 1923 and 1924 had been principally in ore and coal, while the decline between 1926 and 1927 was in iron ore. There was a decrease of 13 per cent in shipments of iron ore in 1927, while the quantities of all other important commodities passing through the canals were substantially larger than in 1926. Iron ore and coal accounted for 81 per cent of the total traffic in 1927, wheat and other grains approximately 16 per cent, while general merchandise was less than 1 per cent of the total.

Table 26.—Traffic Through Sault Ste. Marie Canals (Short Tons of Cargo)

Year	Total tonnage (thousands)	Year	Total tonnage (thousands)	Year	Total tonnage (thousands)	Year	Total tonnage (thousands)
1890	9,041	1902	35,961	1906	51,751	1910	62,363
1895	15,063	1903	34,674	1907	58,217	1911	53,477
1900	25,643	1904	31,546	1908	41,391	1912	72,473
1901	28,403	1905	44,271	1909	57,895		

Year	Total	Iron ore	Coal	Stone	General merchandise	All other [1]	Wheat	Other grain	Flour (thousands of barrels)
	Thousands of short tons						Thousands of bushels		
1913	79,718	48,109	18,623	6	1,771	11,209	204,822	112,230	10,213
1914	55,370	31,414	14,487	-------	1,317	8,152	150,284	68,338	9,715
1915	71,290	45,214	13,357	-------	1,595	11,124	255,482	64,787	8,437
1916	91,888	63,452	16,123	517	904	10,892	226,063	93,190	10,240
1917	89,814	61,374	18,299	571	658	8,912	185,899	67,416	8,450
1918	85,680	60,551	17,982	402	494	6,251	122,718	30,801	8,229
1919	68,236	46,923	13,875	371	542	6,524	113,735	52,734	8,088
1920	79,282	56,780	14,156	563	556	7,226	143,456	51,630	7,478
1921	48,259	22,595	14,763	493	600	9,807	197,715	95,694	10,217
1922	66,067	42,227	9,461	657	881	12,841	275,615	119,225	9,383
1923	91,380	59,357	18,396	697	657	12,272	282,986	87,523	10,486
1924	72,037	42,492	13,665	791	623	14,565	289,723	165,477	10,996
1925	81,875	53,874	12,874	667	707	13,752	292,818	149,927	9,289
1926	85,679	57,649	14,439	582	718	12,292	271,997	100,270	9,797
1927	83,354	50,098	17,107	658	803	14,688	330,898	119,520	9,383
Per cent change from 1926	−2.7	−13.1	+18.5	+13.1	+11.8	+19.5	+21.7	+19.2	−4.2

[1] Mainly grain and flour reported separately in bushels and barrels, respectively, and shown in last three columns.

Source: Board of Engineers for Rivers and Harbors.

Mississippi and Warrior Rivers.

Tonnage on the lower Mississippi River increased consistently from 1922 to 1926, the greatest increase over 1925 being on the Vicksburg-New Orleans section. The passenger traffic increased on all sections except between Memphis and Vicksburg, where it decreased about 70 per cent. Data for 1927 are not available.

Table 27.—Lower Mississippi River Traffic: Freight and Passengers

NOTE.—Each section of the river is treated separately and some of the traffic of each is duplicated in others. The section "Between Ohio and Missouri Rivers" for 1921 and previous years was reported as "St. Louis to Cairo." Ferry traffic is not included.

Year	Between Ohio and Missouri Rivers		Cairo to Memphis		Memphis to Vicksburg		Vicksburg to New Orleans	
	Short tons	Passengers	Short tons	Passengers	Short tons	Passengers	Short tons	Passengers
1919	360, 179	89, 699	655, 938	151, 314	1, 056, 200	121, 842	3, 478, 294	54, 096
1920	1, 008, 152	719, 097	1, 044, 945	69, 757	925, 763	477, 155	2, 874, 910	267, 349
1921	1, 104, 150	494, 924	902, 823	124, 485	1, 629, 747	102, 930	7, 323, 335	222, 338
1922	548, 114	1, 945, 642	923, 386	104, 162	1, 441, 048	62, 690	5, 544, 506	154, 402
1923	723, 068	2, 689, 258	1, 048, 322	159, 224	1, 452, 837	13, 748	5, 493, 297	204, 685
1924	738, 728	1, 771, 971	1, 153, 021	109, 987	1, 666, 440	49, 855	7, 633, 277	223, 462
1925	1, 003, 569	533, 484	1, 688, 654	68, 092	3, 212, 259	60, 534	9, 101, 650	214, 615
1926	1, 005, 979	1, 336, 920	1, 660, 188	106, 393	4, 792, 780	17, 899	11, 074, 488	490, 851

Source: Annual Report of the Chief of Engineers, United States Army.

The Mississippi and Warrior River barge lines, serving the Mississippi River between St. Louis and New Orleans and the Warrior River between Birmingham, Ardova, and Mobile, have been operated by the Federal Government since 1918. In August, 1927, the upper section of the Mississippi division, from St. Louis to Minneapolis and St. Paul, was formally opened for service, the first tow of barges reaching the Twin Cities on August 25.

During 1927 there were 1,237,452 tons of cargo carried by the Mississippi line and 398,694 tons by the Warrior River line as compared with 1,044,649 tons and 296,929 tons, respectively, in 1926. There has been a steady increase in the amount of traffic carried by the Mississippi section during the past four years.

Southbound traffic in 1927 via the Warrior River section increased 76 per cent over 1926, while the northbound traffic showed a decrease of 3.9 per cent. Coal shipments increased 90 per cent in 1927. Shipments southbound on the Mississippi division increased 8 per cent in 1927 over 1926 and the northbound shipments on this division increased 27 per cent.

The most important piece of legislation affecting inland water transportation passed by the Seventieth Congress was the act which authorizes the increase of the capitalization of the Inland Waterways Corporation from $5,000,000 to $15,000,000, provides for the extension as soon as practicable of the Federal Barge Line to the principal tributaries of the Mississippi River, excluding the Ohio

River, and authorizes a survey of the inland waterways from Boston, Mass., to Beaufort, N. C., to determine the potential traffic of these waterways.

Table 28.—Mississippi-Warrior Federal Barge Line Tonnage

NOTE.—Total tonnage in 1922 was: Mississippi, southbound 331,816, northbound 267,853; Warrior; southbound 159,728, northbound 100,616; in 1923, Mississippi, southbound 390,870, northbound 319,561 Warrior, southbound 181,796, northbound 87,545; in 1924, Mississippi, southbound 408,602, northbound 440,901; Warrior, southbound 134,770, northbound 87,575.

Section and commodity	Southbound			Section and commodity	Northbound		
	1925	1926	1927		1925	1926	1927
Mississippi section	**430,111**	**476,621**	**516,866**	**Mississippi section**	**480,644**	**568,028**	**720,586**
Wheat	176,273	113,056	158,555	Bauxite ore	152,493	123,208	244,844
Corn	33,783	49,818	7,813	Sugar	192,421	305,373	373,369
Rye	4,761	6,163	17,950	Sisal	39,820	28,491	14,251
Cotton	17,053	47,699	56,511	Coffee	12,776	16,755	15,193
Bauxite ore concentrates	15,567	17,904	17,582	Paper	(2)	(2)	(2)
Fabricated steel	37,360	42,466	34,494	Nitrate of soda	(2)	(2)	(2)
Bar iron	(1)	(1)	(1)	Burlap	11,873	11,652	9,667
Canned goods	14,703	27,295	21,306	Canned goods	7,819	10,026	8,030
All other	130,611	172,220	202,655	All other	63,442	72,523	55,232
Warrior section	**111,581**	**141,431**	**249,198**	**Warrior section**	**119,883**	**155,498**	**149,496**
Coal	26,463	39,658	75,410	Manganese ore	37,942	25,614	29,423
Rails	49,314	49,639	21,029	Sulphur	21,788	27,012	21,035
Bar iron	(2)	(2)	(2)	Salt	2,888	4,311	3,821
Steel plates	10,504	19,744	33,913	Sugar	21,167	54,171	71,599
Barbed wire	(2)	(2)	(2)	Canned goods	2,892	3,106	3,399
Angle iron	(2)	(2)	(2)	Lumber	14,631	17,045	4,299
Nails	3,053	(2)	(2)	Merchandise	4,002	3,893	4,959
All other	[3] 22,247	[4] 32,390	118,846	All other	14,573	20,346	10,961

[1] Included in "Fabricated steel."
[2] Included in "All other."
[3] Includes: Cotton, 3,316 tons; pig iron, 5,224 tons; and cotton ties, 8,733 tons.
[4] Includes: Cotton, 17,518 tons; pig iron, 672 tons; and cotton ties, 2,082 tons.
Source: Inland Waterways Corporation.

New York State Canals.

For a century New York State has had a system of canals which has carried a very considerable volume of traffic. The tonnage handled by these canals increased quite steadily and reached a peak of about 6,000,000 tons in the years immediately following the Civil War. Our railway system was greatly developed during the seventies and canal traffic was somewhat reduced. The curtailment of shipments over the internal waterways of New York was greatly intensified in the nineties and in the first two decades of the present century, and shipments reached a low point of 1,159,000 tons in 1918. During 1918 the New York State Barge Canal (the Erie Canal deepened and improved), which had been under construction for a number of years, was completed, and since that time there has been a steady growth of canal traffic.

The total movement of traffic on the New York State canals amounted to 2,582,000 tons in 1927, which was about 9 per cent larger than in 1926 and over twice as great as in 1918. Of the 1927 total,

80 per cent was carried on the Erie Canal. Table 30 shows the tonnage of the principal commodities carried during each of the past four years. The most important commodity is wheat, while other commodities carried in large volume include barley, petroleum, sulphur, sugar, sand, stone, and gravel. Shipments of wheat in 1927 were 14 per cent greater than in 1926. The quantity of pulpwood carried was over five times as large as in 1926.

Table 29.—New York State Canals: Tonnage of Freight Moved

NOTE.—All figures in short tons. Tonnage handled over State terminals but not moved through any portion of the canal channel is not included.

Yearly average	All canals	Erie division	Year	All canals	Erie division
1871–1875	5, 974, 097	3, 326, 073	1918	1, 159, 270	667, 374
1876–1880	5, 219, 888	3, 542, 020	1919	1, 238, 844	842, 164
1881–1885	5, 210, 389	3, 495, 590	1920	1, 421, 434	891, 221
1886–1890	5, 281, 441	3, 589, 631	1921	1, 270, 407	993, 639
1891–1895	4, 112, 061	2, 962, 528	1922	1, 873, 434	1, 485, 109
1896–1900	3, 544, 951	2, 446, 065	1923	2, 006, 284	1, 626, 062
1901–1905	3, 335, 210	2, 144, 492	1924	2, 032, 317	1, 691, 766
1906–1910	3, 238, 129	2, 206, 595	1925	2, 344, 013	1, 945, 466
1911–1915	2, 448, 837	1, 626, 451	1926	2, 369, 367	1, 935, 278
1916–1920	1, 348, 365	798, 706	1927	2, 581, 892	2, 047, 774

Source: Commissioner of Canals and Waterways, Department of Public Works, State of New York, Albany, N. Y.

Table 30.—Traffic on the New York State Canals (Tons)

Commodity	Entire system			
	1924	1925	1926	1927
Total	**2, 032, 317**	**2, 344, 013**	**2, 369, 367**	**2, 581, 892**
Products of agriculture:				
Wheat	412, 840	566, 669	503, 432	574, 483
Rye	173, 712	43, 610	67, 344	38, 880
Flaxseed	118, 518	21, 880	64, 066	42, 729
Barley	63, 628	253, 755	227, 788	185, 858
Corn	34, 666	18, 133	8, 645	7, 084
All other	30, 301	48, 019	28, 236	23, 598
Forest products:				
Lumber	80, 490	69, 940	96, 760	78, 910
Pulpwood	8, 744	9, 069	5, 719	31, 198
All other	14, 077	19, 453	21, 218	20, 959
Products of the ground:				
Sand, stone, gravel	384, 204	366, 075	332, 803	373, 098
Sulphur	101, 624	177, 859	208, 627	145, 963
Coal	51, 743	37, 222	53, 687	75, 798
All other	21, 657	21, 553	34, 524	55, 327
Manufactured products:				
Petroleum and other oil	290, 750	322, 141	325, 705	393, 497
Iron, pig and bloom	32, 651	35, 907	44, 156	97, 324
Iron or steel articles	12, 083	20, 464	16, 835	19, 520
Brick	35, 974	45, 332	43, 886	31, 806
Salt	35, 814	69, 809	50, 869	45, 205
Sugar	8, 875	24, 782	42, 054	122, 390
Paper and paper products	30, 368	47, 738	58, 975	60, 475
Chemicals and drugs	30, 492	33, 714	26, 001	14, 709
All other	34, 657	76, 704	78, 734	98, 910
All other products	24, 449	14, 185	29, 303	44, 171

Source: Superintendent of Public Works, State of New York.

OCEAN SHIPPING [1]

SUMMARY.—The total tonnage of the merchant marine of the United States continued to decline in 1927 and was smaller by 2 per cent than in 1926. It is still more than twice as large as in pre-war years. The reduction in vessels engaged in foreign trade accounted for 97 per cent of the total decrease in our merchant marine. However, there is still more than seven times as much tonnage engaged in foreign trade than was the case in 1914.

The idle steam shipping of the world increased during 1927. The year 1926, however, had marked a new postwar low level. About 69 per cent of the idle fleet of the world is made up of United States ships. There was a considerable increase during 1927 in the amount of tonnage under construction in the world as a whole, but the United States showed a decrease of 54,000 tons, or 36 per cent, as compared with 1926. Motor ships continued to gain favor, 52 per cent of the world tonnage under construction on December 31, 1927, being of that type, as compared with 47 per cent a year earlier.

Entrances of vessels engaged in foreign trade at United States ports aggregated 74,310,000 net tons, which was 3.4 per cent less than in 1926, but was larger than in other recent years. About 72 per cent of the vessels entered carried cargo in 1927, a larger proportion than in 1926. Clearances from United States ports aggregated 75,440,000 net tons in 1927, a decrease of 4.6 per cent as compared with 1926. Vessels with cargo represented about 80 per cent of the total clearances in both 1926 and 1927. American vessels carried a larger proportion of both the incoming and outgoing traffic in 1927 than in 1926.

Table 31.—Summary of Major Statistics of Shipping

[In thousands of tons]

Item	1910–1914 average [1]	Calendar years, except as noted						Per cent change, 1927 from 1926
		1922	1923	1924	1925	1926	1927	
American merchant marine:								
Total gross tonnage	7,735	[1] 18,463	[1] 18,285	[1] 17,741	[1] 17,406	[1] 17,311	[1] 16,788	−3.0
Tonnage in foreign trade	931	[1] 10,720	[1] 9,069	[1] 8,794	[1] 8,151	[1] 7,719	[1] 7,309	−5.3
Entrances, in foreign trade:								
Total net tonnage	46,619	65,191	66,319	68,292	69,378	76,934	74,310	−3.4
With cargo	32,597	49,397	48,986	48,738	50,773	52,245	53,286	+2.0
Clearances, in foreign trade:								
Total net tonnage	46,579	64,839	66,624	68,910	70,228	79,041	75,440	−4.6
With cargo	40,404	48,478	51,912	53,720	54,555	63,478	60,075	−5.4
Panama Canal, total cargo tonnage	[2] 4,967	13,711	25,161	25,892	23,701	27,586	29,103	+5.5

[1] As of June 30 or for years ended June 30.

[2] Calendar year 1915 only.

Tonnage of the World's Merchant Marine.

The world's merchant marine, considering steel steam and motor vessels (not including United States and Canadian Great Lakes tonnage and Philippine Islands tonnage), amounted to 58,507,000 gross tons on June 30, 1927. This total is 662,000 tons greater than was recorded on June 30, 1926, and represents an increase of 18,770,000

[1] *General note as to units of measurement.*—"Cargo tonnage" represents weight of cargo actually loaded, unloaded, or carried in either long tons (2,240 pounds) or short tons (2,000 pounds), as specified. All other tonnage figures refer to capacity of vessels. The terms "gross and net tonnage" refer to space measurement, 100 cubic feet being called 1 ton. Gross tonnage is the capacity of the entire space within the frames and the ceiling of the hull, together with those closed-in spaces above deck available for cargo, storage, passengers, or crew, with certain minor exemptions. Net or registered tonnage is what remains after deducting from the gross tonnage the spaces occupied by the propelling machinery (including allowance for fuel), crew quarters, master's cabin, and navigation spaces. It represents substantially space available for cargo and passengers. The net tonnage capacity of a ship recorded as "entered with cargo" may bear little relation to the actual weight of the cargo.

tons as compared with 1914. During the year ended June 30, 1927, the greatest decrease took place in the fleet of the United States, while the largest increases occurred in the fleets of Germany and Italy.

The world's tonnage of oil-burning steamers of over 100 tons increased by 1.3 per cent in 1927. Motor ships in 1927 showed a gain of 778,000 gross tons as compared with 1926. The tanker fleet of the world also continued to increase during 1927, totaling 5,847,000 gross tons on June 30.

Comparative statistics of world tonnage, idle shipping, and vessel construction of the leading maritime nations will be found in Volume II of the Commerce Yearbook, 1928.

American Shipping.

The total tonnage of American merchant vessels amounted to 16,788,000 gross tons on June 30, 1927, a decrease of 2 per cent as compared with a year earlier, although still more than twice as large as in 1914. Tonnage documented for foreign trade continued the decline which began in 1922, and on June 30, 1927, was 410,000 tons less than on June 30, 1926, a decrease of more than 5 per cent. However, there is still nearly seven times as much tonnage documented for foreign trade as in 1914. Slight decreases occurred during the year in tonnage of vessels documented for the coastwise and internal trade and the Great Lakes trade. The former is 38 per cent greater than in 1914, while tonnage documented for the Great Lakes trade is slightly less than in 1914.

Table 32.—Merchant Marine of the United States

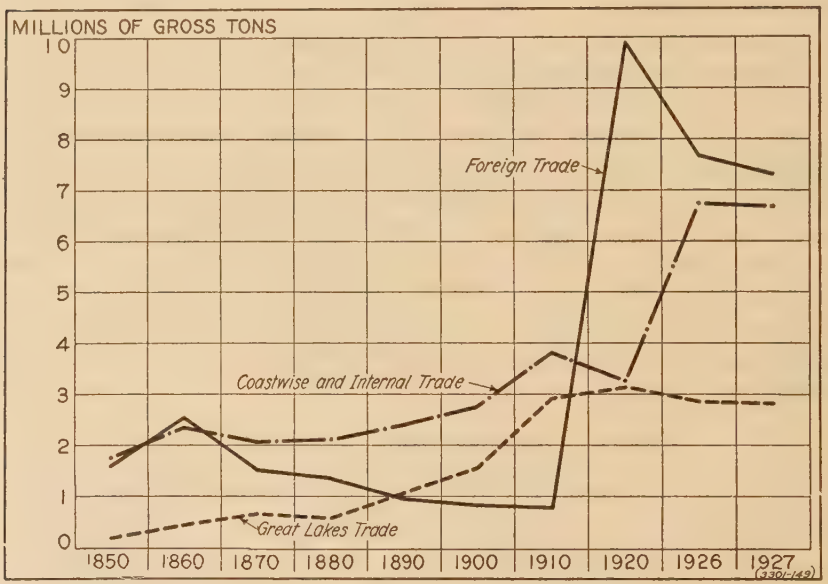
Year ended June 30—	Number of vessels			Gross tonnage (thousands)					
							Documented for—		
	Total [1]	Sailing, etc.[1]	Steam and gas	Total	Sailing, etc.[1]	Steam and gas	Foreign trade [2]	Coastwise and internal trade [3]	Great Lakes [4]
1850				3,535	3,010	526	1,586	1,950	198
1860				5,354	4,486	868	2,546	2,808	468
1870	28,998	25,474	3,524	4,247	3,171	1,075	1,517	2,730	685
1880	24,712	19,995	4,717	4,068	2,856	1,212	1,353	2,715	605
1890	23,467	17,502	5,965	4,424	2,565	1,859	947	3,478	1,063
1900	23,333	16,280	7,053	5,165	2,507	2,658	827	4,338	1,566
1910	25,740	13,288	12,452	7,508	2,608	4,900	792	6,716	2,895
1914	26,943	11,452	15,491	7,929	2,501	5,428	1,076	6,852	2,883
1917	26,397	10,155	16,242	8,871	2,438	6,433	2,446	6,425	2,779
1918	26,711	10,053	16,658	9,925	2,453	7,471	3,604	6,321	2,798
1919	27,513	9,862	17,651	12,907	2,492	10,416	6,670	6,238	3,024
1920	28,183	9,369	18,814	16,324	2,501	13,823	9,929	6,395	3,139
1921	28,012	8,941	19,071	18,282	2,537	15,745	11,082	7,200	2,840
1922	27,358	8,398	18,960	18,463	2,481	15,982	10,725	7,738	2,724
1923	27,017	8,071	18,946	18,285	2,463	15,821	9,073	9,212	2,758
1924	26,575	7,825	18,750	17,741	2,425	15,315	8,797	8,943	2,791
1925	26,367	7,730	18,637	17,406	2,430	14,976	8,155	9,251	2,853
1926	26,343	7,654	18,689	17,311	2,462	14,848	7,722	9,589	2,844
1927	25,778	7,394	18,384	16,888	2,381	14,507	7,317	9,417	2,805

[1] Includes canal boats and barges.
[2] Includes tonnage, formerly considerable but recently insignificant, engaged in whale fisheries.
[3] Includes vessels engaged in cod and mackerel fisheries (37,573 tons in 1927).
[4] Included in preceding column.

Source: Bureau of Navigation, Department of Commerce.

Table 32 shows the changes in our merchant marine since 1850. It is noteworthy that the tonnage documented for foreign trade fell steadily from 1860 to 1910 and was less than one-third as great in the last-named year as half a century earlier. A very large increase over the 1910 figures, however, had taken place even before the United States entered the World War in 1917. This increase, which started in pre-war years, continued through 1921, since which time there has been a gradual decrease. It should be borne in mind that the proportion of idle vessels in the American foreign trade shipping was far

Chart IX.—MERCHANT MARINE OF THE UNITED STATES DOCUMENTED FOR FOREIGN, COASTWISE, AND GREAT LAKES TRADE



greater in 1921 than now; the decrease in active vessels since that year has been somewhat less than 1,500,000 gross tons.

Idle Tonnage.

The increase in total world tonnage, which resulted largely from the construction of ships in the United States during and immediately after the war, caused the supply of shipping to exceed greatly the demand. As a result of this construction and the postwar depression of world trade, there has been considerable tonnage idle. This situation, however, has been improving with the general recovery in world trade. During the year 1926 increased employment was afforded shipping as a result of the British coal stoppage, during which period the shipments of coal from the United States to the United

Kingdom aggregated nearly 9,200,000 tons. The low postwar level which idle tonnage reached in 1926 was due in part to the breaking up of obsolete vessels but chiefly to the increased demand for ships growing out of the British coal trouble. However, with the settlement of the trouble, the demand for tonnage again declined, and on January 1, 1928, the idle tonnage of the world had increased by 255,000 gross tons as compared with the corresponding date a year earlier and amounted to 4,331,000 gross tons.

Idle shipping of the United States was greater by 102,000 tons on January 1, 1928, than on January 1, 1927. American tonnage idle aggregated 2,978,000 tons, about two-thirds as much as four years ago.

Ship Construction.

On December 31, 1927, a total of 3,118,000 gross tons of shipping was under construction in the principal shipbuilding countries of the world, an increase of 61 per cent as compared with the tonnage under construction a year earlier. This increase was due largely to the accumulation of work resulting from the British coal stoppage. At the end of last year there was more tonnage under construction than there had been at the end of any of the previous five years. Less shipping was under construction in the United States than a year earlier when the total was 151,000 gross tons as compared with 97,000 gross tons at the end of 1927, a decrease of 36 per cent.

Table 33.—Shipbuilding: Vessels Built in the United States and Documented for American Shipowners, Years Ended June 30

Yearly average	Number	Gross tons	Yearly average or year	Number	Gross tons	Year	Number	Gross tons
1851–1860	1,466	366,603	1911–1916	1,275	289,461	1922	845	661,232
1861–1870	1,654	299,602	1917	1,279	664,479	1923	770	335,630
1871–1880	1,455	253,800	1918	1,528	1,300,868	1924	1,049	223,968
1881–1890	1,056	230,197	1919	1,953	3,326,621	1925	967	199,846
1891–1900	1,055	235,699	1920	2,067	3,880,639	1926	924	224,673
1901–1910	1,311	418,178	1921	1,361	2,265,115	1927	917	245,144

Source: Bureau of Navigation.

Motorships.

Progress continues in the construction of vessels fitted with internal-combustion engines. At the close of 1927 the gross tonnage of these vessels under construction in all countries was 1,610,000 tons, or 52 per cent of the total shipping under construction. Great Britain and Ireland led in the construction of motorships, followed by Germany, the Netherlands, and Italy.

The motorships afloat of 100 gross tons and over increased from 3,493,000 tons on June 30, 1926, to 4,271,000 tons on the corresponding date of 1927. Great Britain and Ireland continue to lead in

ownership of such vessels, having on June 30, 1927, a total of 1,167,000 gross tons. Norway ranks second with 581,000 tons, followed by Italy with 364,000 tons, the United States with 348,000 tons, and Germany with 315,000 tons.

Sales Prices of Ships.

The sales prices of ships increased somewhat in 1927, during which year 11 cargo steamers of 5,000 to 10,000 dead-weight tons, not over five years old, brought an average price of $39 per ton. Most of these steamers were sold during the early part of the year, when the demand for tonnage was inflated as a result of the British coal stoppage. The average price recorded for 1927 is higher than that for 1926, during which year an equivalent number of steamers of corresponding tonnage and age sold for an average price of $35.50 per ton. During the second half of 1925 eight steamers brought an average price of only $24.

Entrances and Clearances.

The amount of space available for cargo and passengers in our foreign trade is shown by the net tonnage of vessels entering and clearing. (Table 34.) The total net tonnage of all vessels entering United States ports during 1927 was 74,310,000, a decrease of 2,624,000 tons, or 3 per cent, as compared with 1926, which was a record year. This total is 59 per cent greater than the average for 1910 to 1914, and the tonnage entering with cargo is greater by 63 per cent. While the net tonnage of all vessels entered American ports decreased during 1927, the net tonnage of vessels entered with cargo increased by 1,041,000 tons, or nearly 2 per cent. During 1926 the tonnage of vessels entered in ballast was larger as a result of many vessels coming empty to the United States to load coal for Great Britain. Vessels entering in ballast during 1927 showed a decrease of 3,665,000 tons as compared with 1926. American vessels, which represented slightly less than one-fourth of the total average yearly tonnage entered in the pre-war period (1910–1914), were 35 per cent of the total in 1926 and 39 per cent in 1927.

The total tonnage cleared in the foreign trade during 1927 showed an increase of 62 per cent over the average for 1910 to 1914, while tonnage cleared with cargo increased only 49 per cent during the same period. This fact is largely a result of the growth of imports of petroleum, as vessels in that trade generally must clear from the United States in ballast. The net tonnage of all vessels cleared during 1927 decreased by 3,601,000 tons, or approximately 5 per cent, as compared with 1926; practically all of this decrease was in vessels with cargo, the 1926 figures having been swollen by the abnormal coal exports.

Table 34.—Net Tonnage of Vessels Entered and Cleared in Foreign Trade

[In thousands of net tons of vessel capacity. Net ton equals 100 cubic feet of space, excluding cabins, machinery, etc.]

Class	All ports							Seaports only	
	1910–1914 [1]	1921–1925 [1]	1923	1924	1925	1926	1927	1926	1927
Total entrances	**46,619**	**66,292**	**66,319**	**68,292**	**69,378**	**76,934**	**74,310**	**63,756**	**58,820**
American	11,328	29,644	27,725	29,628	27,947	26,891	29,289	21,089	21,918
Foreign	35,291	36,648	38,594	38,664	41,431	50,043	45,021	42,667	36,902
Per cent American	24.3	44.8	41.8	43.4	40.3	35.0	39.4	33.1	37.3
With cargo (total)	32,597	47,946	48,986	48,838	50,773	52,245	53,286	45,112	45,430
American	6,042	21,846	21,125	21,652	21,202	20,518	21,777	17,102	17,638
Foreign	26,555	26,000	27,861	27,186	29,571	31,727	31,509	28,010	27,792
In ballast (total)	14,022	18,346	17,333	19,454	18,605	24,689	21,024	18,644	13,390
American	5,286	7,798	6,600	7,975	6,745	6,373	7,512	3,987	4,280
Foreign	8,736	10,547	10,733	11,478	11,859	18,316	13,512	14,657	9,110
Total seaports	35,211	52,934	52,775	54,726	55,636	63,756	58,820	63,756	58,820
Total northern and Mexican borders	11,408	13,358	13,544	13,565	13,742	13,178	15,490	----	----
Total clearances	**46,579**	**66,653**	**66,624**	**68,910**	**70,228**	**79,041**	**75,440**	**65,583**	**59,731**
American	11,590	29,554	27,932	30,091	27,808	28,532	29,793	22,234	22,061
Foreign	34,989	37,098	38,692	38,818	42,420	50,509	45,647	43,349	37,670
Per cent American	24.9	44.4	41.9	43.7	39.6	36.1	39.5	33.9	37.1
With cargo (total)	40,404	51,468	51,912	53,720	54,555	63,478	60,075	54,237	49,390
American	8,996	19,681	18,966	20,465	18,896	19,724	20,881	15,838	16,506
Foreign	31,408	31,786	32,946	33,255	35,659	43,754	39,194	38,399	32,884
In ballast (total)	6,175	15,184	14,712	15,190	15,673	15,563	15,365	11,346	10,341
American	2,594	9,872	8,966	9,626	8,912	8,808	8,912	6,396	5,555
Foreign	3,581	5,310	5,746	5,564	6,761	6,755	6,453	4,950	4,786
Total seaports	34,965	53,553	53,216	55,294	57,160	65,583	59,730	65,583	59,731
Total northern and Mexican borders	11,614	13,099	13,408	13,616	13,068	13,458	15,710	----	----

[1] Average for the period; data for 1910–1914 are for fiscal years ended June 30.

Source: Bureau of Foreign and Domectic Commerce.

Volume of Water-Borne Foreign Commerce.

The water-borne exports weighed 68,140,000 tons in 1926 (data for 1927 not available), exceeding the 1925 shipments by nearly 42 per cent. Coal exports accounted for the bulk of this increase, resulting from the urgent demand occasioned by the British coal stoppage. Water-borne imports of the United States also increased in 1926, totaling 44,686,000 tons and exceeding the 1925 receipts by 4.7 per cent. Atlantic ports accommodated about 64 per cent of all imports and nearly 52 per cent of all exports in 1926.

The decline in the proportion of ocean-borne dry cargo exported in American-flag vessels continued during 1926, 21 per cent of the total being so carried as against 30 per cent in 1925. (Table 36.) The situation, however, is not so adverse as these figures indicate. The decline in 1926 was largely the result of heavy movements of coal to Great Britain, most of which was carried in British and other foreign tramp vessels. The proportion of imports of dry cargoes carried in American-flag vessels increased in 1926, amounting to 30 per cent as against 28 per cent in the previous year.

Table 35.—Weight of Cargo of Water-Borne Foreign Trade, by Districts

[In thousands of long tons; calendar years]

District	1921	1922	1923	1924	1925	1926
Total imports	**33,185**	**44,682**	**43,296**	**40,899**	**42,686**	**44,686**
North Atlantic district	17,461	26,018	24,270	22,351	23,676	26,449
South Atlantic district	788	1,090	1,560	1,726	2,085	2,165
Gulf district	10,270	11,024	10,029	9,889	8,522	8,184
Pacific district	1,342	1,814	2,524	2,585	2,580	2,712
Great Lakes district	3,324	4,736	4,913	4,348	5,823	5,176
Total exports	**48,640**	**42,502**	**49,080**	**52,261**	**48,091**	**68,140**
North Atlantic district	22,342	18,669	20,714	20,696	19,904	33,994
South Atlantic district	1,147	786	927	822	1,023	1,354
Gulf district	13,132	10,584	10,599	12,805	12,206	13,304
Pacific district	4,440	5,465	8,472	9,360	8,036	11,450
Great Lakes district	7,579	6,998	8,368	8,578	6,922	8,038

Source: Bureau of Research, United States Shipping Board.

Table 36.—Water-Borne Foreign Commerce of the United States: Weight of Cargo and Percentage in American Vessels

[In thousands of long tons; calendar years]

Item	1921	1922	1923	1924	1925	1926
IMPORTS						
Total weight of cargo	**33,178**	**44,780**	**43,525**	**40,899**	**42,683**	**43,198**
Dry cargo, ocean	12,357	20,790	23,050	21,894	24,410	26,189
Tanker cargo, ocean	17,362	19,156	15,333	14,657	12,718	12,254
Great Lakes	3,459	4,834	5,142	4,348	5,555	4,755
Per cent of total carried by:						
Shipping Board	15	12	7	6	5	6
Other American	56	51	46	48	44	41
British	(1)	19	21	21	22	24
Other foreign	29	18	26	25	29	29
Per cent carried in American vessels:						
Of all cargoes	71	63	53	54	49	47
Of dry cargoes, ocean	44	35	31	32	28	30
Of tanker cargoes, ocean	87	87	77	79	74	76
Of Great Lakes cargoes	87	85	79	84	81	71
EXPORTS						
Total weight of cargo	**48,653**	**42,693**	**49,694**	**52,261**	**48,086**	**66,966**
Dry cargo, ocean	34,855	29,064	31,225	32,626	31,000	46,914
Tanker cargo, ocean	5,980	6,440	9,488	11,057	10,340	12,174
Great Lakes	7,818	7,189	8,981	8,578	6,746	7,878
Per cent of total carried by:						
Shipping Board	15	16	14	13	11	8
Other American	23	24	19	22	21	17
British	(1)	33	38	36	37	42
Other foreign	62	27	29	29	31	33
Per cent carried in American vessels:						
Of all cargoes	38	40	33	35	32	25
Of dry cargoes, ocean	33	34	32	32	30	21
Of tanker cargoes, ocean	40	36	25	32	35	31
Of Great Lakes cargoes	62	63	45	52	40	39

[1] Included in "Other foreign vessels."

Source: Bureau of Research, United States Shipping Board.

Panama Canal Traffic.

The year 1927 established a record in point of traffic moving through the Panama Canal. A total of 29,103,000 cargo tons passed through the canal in 1927 as compared with 27,586,000 tons in 1926. Traffic from the Pacific to the Atlantic constituted 71 per cent of the total traffic during 1927. The eastbound traffic has been much heavier than the westbound movement, owing largely to

heavy shipments of crude oils and lumber, most of which go to the eastern seaboard of the United States, and grain going to Europe. Traffic by origin and destination (calendar years) is shown in Table 38.

Table 37.—Commercial Traffic Through the Panama Canal

[All figures are cargo tonnage expressed in thousands]

Item	Year ended June 30—						Calendar year			
	1922	1923	1924	1925	1926	1927	1924	1925	1926	1927
Total	**10,885**	**19,568**	**26,995**	**23,959**	**26,037**	**27,748**	**25,892**	**23,701**	**27,586**	**29,103**
American vessels	4,951	11,055	16,554	13,080	13,711	15,242	14,666	12,678	14,855	15,346
Foreign vessels	5,934	8,513	10,340	10,879	12,326	12,506	11,226	11,023	12,731	13,757
British	3,330	4,929	6,052	5,917	6,751	6,437	6,353	5,976	6,932	6,984
Atlantic to Pacific	5,496	7,086	7,860	7,398	8,037	8,583	7,541	7,560	8,420	8,405
Pacific to Atlantic	5,389	12,482	19,135	16,560	18,000	19,165	18,351	16,141	19,166	20,697

Source: Report of the Governor of the Panama Canal.

Table 38.—Commercial Tonnage Through Panama Canal, by Origin and Destination, Years Ended December 31

[Figures are cargo tons (2,240 pounds) expressed in thousands]

Origin and destination	Atlantic to Pacific			Origin and destination	Pacific to Atlantic		
	1925	1926	1927		1925	1926	1927
Grand total	**7,560**	**8,420**	**8,405**	**Grand total**	**16,141**	**19,166**	**20,697**
To west coast United States	3,056	3,308	3,437	To east coast United States	10,478	12,077	11,797
To west coast other North America	603	626	627	To east coast other North America	817	1,316	1,850
To west coast South America	1,219	1,193	1,165	To Europe	4,621	5,520	6,609
To Asia	1,325	1,804	1,742	To Africa and South America	225	254	441
To Australasia	1,358	1,489	1,434				
From east coast United States, total	**4,981**	**5,639**	**5,629**	**From west coast United States, total**	**8,966**	**11,679**	**12,427**
To west coast United States	2,468	2,655	2,725	To east coast United States	6,992	8,267	8,183
To west coast other North America	175	180	144	To east coast other North America	336	749	1,023
To west coast South America	359	432	365	To Europe	1,550	2,560	2,966
To Asia	1,261	1,576	1,634	To Africa and South America	88	103	255
To Australasia	717	796	761				
From east coast other North America, total	**518**	**700**	**585**	**From west coast other North America, total**	**1,493**	**1,970**	**2,005**
To west coast North America	206	208	231	To east coast North America	573	813	719
To west coast South America	128	81	91	To Europe	884	1,131	1,263
To Asia	51	215	87	To Africa and South America	37	26	23
To Australasia	133	196	176	**From west coast South America, total**	**4,821**	**4,559**	**5,139**
From Europe, total	**1,993**	**1,943**	**2,008**	To east coast United States	2,700	2,773	2,534
To west coast North America	753	771	801	To east coast other North America	345	367	562
To west coast South America	723	674	699	To Europe	1,675	1,295	1,899
To Asia and Australasia	517	498	508	To Africa and South America	100	124	164
From east coast South America and miscellaneous, total	**68**	**138**	**183**	**From Asia and Australasia, total**	**861**	**957**	**1,126**
				To east coast North America	348	424	626
				To Europe	512	534	500

Source: The Panama Canal Record.

Shipping Legislation.

With the object of developing further the American merchant marine and of assuring its permanence, Congress passed the merchant marine act of 1928. This act declares that it is necessary

that the United States shall have a merchant marine, sufficient to carry the greater portion of its commerce and serve as a naval or military auxiliary in time of war or national emergency, ultimately to be owned and operated privately by citizens of the United States. The act provides that the Shipping Board shall not sell any vessels except when in its judgment the building up and maintenance of an adequate merchant marine can be best served thereby. The Shipping Board is directed to present recommendations to Congress from time to time, if it considers that new vessels are required for permanent operation under the United States flag in foreign trade.

A revolving "construction loan fund" is provided to aid citizens of the United States in the construction of vessels for service on lines deemed desirable by the Shipping Board. An appropriation of $250,000,000 is made for the fund. Loans may be made for as long a time as 20 years and are to bear low interest rates. No loan, however, shall be for a greater sum than three-fourths the cost of the vessels to be constructed or reconditioned.

The act provides for compensation of American foreign trade vessels under mail contracts according to the speed and tonnage of ships. For vessels having a speed of 24 knots and a gross registered tonnage of not less than 20,000 tons, $12 per nautical mile is the maximum rate. Successively lower maximum rates are established for vessels of lower speed and less tonnage. The board may create out of insurance premiums, and the revenue from operations and sales, separate insurance funds which it may use to insure in whole or in part against all hazards any legal or equitable interest of the United States.

CIVIL AERONAUTICS

Commercial air transportation in the United States, for which the foundations were laid in 1926 by the passage of the air commerce act, experienced an unparalleled development during 1927. Public interest and support were forthcoming to a degree little dreamed of by even the most ardent supporters of air transportation. To a considerable extent this public interest was due to spectacular flights made in the course of the year.

The developments during the year were largely in the direction of increased use of air mail, increased air passenger and express services, and at the same time extension and improvement of regular air lines.

The Air Commerce Act.

Under the act of 1926 the Secretary of Commerce is charged with the encouragement and regulation of the use of aircraft in commerce, immediate control being under an Assistant Secretary for Aeronautics appointed by the President. The duties of the Assistant Secretary

for Aeronautics are to encourage the establishment of airports, airways, and other air-navigation facilities; to study the possibilities in the development of air commerce, industry, and trades; to establish and maintain civil airways, intermediate landing fields, lights, signal and radio direction-finding apparatus, and other structures and facilities excepting airports used as aids to navigation; to chart airways and publish air maps; to recommend to the Secretary of Agriculture necessary meteorological service; to collect and disseminate information relative to air commerce and the state of the art; to advise with other executive governmental agencies in research and development of air-navigation facilities and transfer of funds; to investigate, record, and publish causes of accidents; and to exchange with foreign governments civil air information.

The Assistant Secretary for Aeronautics may apply to civil aircraft, to such extent as he deems advisable, the laws and regulations relative to entry and clearance of vessels. Upon agreement with the Postmaster General, the Secretary of Commerce may take over the airways and air-navigation facilities now under jurisdiction of the Post Office Department (save airports and terminals, which may be transferred to the jurisdiction of municipalities concerned under arrangement subject to approval by the President).

Under the act the Assistant Secretary for Aeronautics will identify aircraft, license aircraft and airmen, and suspend or revoke licenses of aircraft or airmen; periodically examine aircraft; rate air-navigation facilities; establish air-traffic rules; and cooperate with other Government agencies along certain specified lines. Penalties are also provided for violations of regulations promulgated under the air commerce act.

Activities of Aeronautics Branch.

The first important accomplishment of the Aeronautics Branch after its formation in 1926 was the promulgation of the Air Commerce Regulations, effective December 31, 1926. These regulations were arrived at after repeated conferences with organizations and individuals actively interested in aeronautics. They provide in detail for (*a*) the licensing of aircraft, (*b*) the marking of licensed and unlicensed aircraft, (*c*) requirements in the operation of aircraft, (*d*) the licensing of pilots and mechanics, and (*e*) air-traffic rules. In the latter part of 1927 another conference was held, when the regulations promulgated in 1926 were revised to conform to the rapid developments during the year.

A second important development was the lighting of additional established airways. With the established airways of the air mail service as a nucleus, good progress was made in 1926 and by June 30, 1927, there were 4,121 miles of airways lighted. It is estimated that

an additional 3,450 miles will be lighted by June 30, 1928, as shown in the following statement:

	Lighted miles
New York to Atlanta	763
Los Angeles to Seattle (partial)	588
Chicago to Twin Cities (partial)	357
Salt Lake to Pasco (partial)	124
San Francisco to Salt Lake	621
Los Angeles to Salt Lake (to complete)	355
Louisville to Cleveland	345
Cleveland to Detroit	80
New Orleans to Atlanta (partial)	145
Tulsa to Ponca City	72
Total	3,450

Plans have been made to light routes in 1928–29, totaling 5,793 miles.

Aids to Aerial Navigation.

Much progress is being made in the improvement of radio aids on the airways, such as directive radiobeacons, marker beacons, and radiotelephony from ground to aircraft. These can all be utilized on an aircraft by means of a simple receiving set. The directive radiobeacon sends out a directive type of radiation by means of which the aviator can follow a set course. Two sets of distinctive code signals are heard, and when these signals are of equal intensity the pilot is flying on a course directly toward (or away from) the radiobeacon. With the beacon in use at present these signals have been found to be effective for navigation purposes for distances up to approximately 175 miles.

A visual course indicator has now been developed at the Bureau of Standards to take the place of the aural method described above. This indicator, which is carried on the instrument board, contains two vibrating reeds, placed side by side, the ends of which are visible to the pilot. When the airplane is on its course these two reeds vibrate with equal amplitude and trace out what appear to be two white lines of equal length. The marker beacons are low-power radio transmitting outfits located on emergency landing fields and serve as milestones along the course.

Radiotelephony is a most important radio aid to air navigation. It is hoped that it will soon be possible to establish ground stations by means of which the Department of Commerce can broadcast important weather information to airplanes in flight.

Weather Bureau Reports.

The most important information given the pilot is that concerning the weather. Under the air commerce act, the Weather Bureau established 25 new "upper air" stations along the airways, in 1927,

making a total of 41 in operation. In addition there are trained observers at the airports, where practicable. These "upper air" stations transmit twice daily to terminal airports reports on upper-air weather conditions. In addition to the regular Weather Bureau stations special airway meteorological stations have been established at other points along the routes, and this number will be increased. By telephone or telegraph the next airport in both directions is furnished current weather information, not only of general conditions and those in sections of the country flown over but in many cases immediate forecasts through the ensuing few hours.

Airports.

The Department of Commerce continued work with municipal organizations for the establishment of an airport in every large city. The air commerce act provides that airports shall not be owned or operated by the Federal authorities and that no exclusive rights shall be granted for the use of any civil airway, airport, or other navigation aid owned by the United States. The airport should be as large as possible, easy of approach from four directions, and reached by all methods of ordinary transportation. Obviously, it should provide all facilities necessary to aircraft operation. It should be planned to care for rapid expansion in air transport and other air operations.

Although the airports can not be owned or maintained by the Department of Commerce, the department is charged with the encouragement of their establishment and will rate airports as navigation aids on and after July 1, 1928. General information on the construction and equipment of airports has been prepared for distribution.

Along established air routes, at intervals of about 30 miles between the airports, the lighted intermediate fields of the Department of Commerce are located. These are leased from their owners and the property will not be used for any purpose inconsistent with that of landing and taking off by aircraft. The boundaries and constructions of each field are indicated by electric lamps in waterproof fixtures on standards, power being furnished from commercial current or small gasoline generating sets. A standard beacon light is placed at every such intermediate field.

Air Commerce in 1927.

The quick and safe transportation of passengers, mail, and express is perhaps the main advantage of an airway service. The mail service started development first, followed by passenger and express. On July 1, 1927, there were 15 mail airways in operation or under contract, 9 more advertised for contract, and 3 routes not used for mail. In the last half of 1927 three more mail airways and one other

airway were placed in operation. A considerable increase in flying routes is proposed for 1928, and it is estimated that airways will serve a total trading area having a population of 65,000,000. Table 39 shows data on operation of civil airways in 1927.

Table 39.—Scheduled Flying on Civil Airways in 1927

Route	Length of operation	Length of route	Scheduled trips [1]	Passengers carried [2]	Express carried	Mail carried	Payments to contractors for air mail carried
	Months	*Miles*	*Miles*		*Pounds*	*Pounds*	
Total			5,809,999	8,572	2,261,507	1,654,165	$2,643,454
Transcontinental [3]	6	2,661	913,031			212,366	
Chicago-New York [3]	8	712	407,404			171,500	
San Francisco-Chicago	6	1,949	786,599	779	6,600	289,506	608,280
Chicago-New York	4	712	1,005,021	549	15,075	172,851	205,862
Dallas-Chicago	12	995				109,789	329,369
New York-Boston	12	219	111,132	516	913	20,186	60,561
St. Louis-Chicago	12	268	123,117	25	3,500	34,784	88,255
Los Angeles-Salt Lake City	12	633	468,329	400	4,527	203,224	609,671
Salt Lake City-Pasco	12	540	322,570			59,972	179,919
Detroit-Cleveland	12	155	380,641		2,217,621	1,724	1,863
Detroit-Chicago	12	252				12,291	13,251
Detroit-Buffalo	9	218					
Los Angeles-Seattle	12	1,080	693,350	1,252	859	76,386	216,048
Chicago-Minneapolis-St. Paul	12	399	192,425	286		27,647	76,030
Pueblo-Cheyenne	12	200	[4] 98,400	([5])	([5])	36,193	103,033
Pittsburgh-Cleveland	8	121	[4] 59,440	([5])	([5])	19,573	58,719
Cleveland-Buffalo	½	177	3,324	8		329	365
Cincinnati-Chicago	½	267	[4] 6,516	([5])	([5])	1,043	1,534
Pilottown-New Orleans	12	75	51,270			78,516	34,798
Seattle-Victoria	12	77	25,056	18		53,316	27,310
Key West-Havana	2	104	14,300			72,969	20,078
Detroit-Grand Rapids	7	140	75,847	1,975	349		
Detroit-Cleveland	2	155					
San Diego-Los Angeles	1½	115	17,862	530			
Los Angeles-Tucson	1	440	13,500	61	63		
Wilmington-Avalon	10	32	24,275	2,173	12,000		
Concord-Burlington	1½	125	16,590			([5])	8,508

[1] Does not include about 200,000 miles flown in ferry and test.
[2] Figures include both pay and complimentary travelers, but relate to scheduled trips only. In addition 34,500 passengers were carried by the air transport companies on special flights.
[3] San Francisco-Chicago, and Chicago-New York sections operated by Post Office Department until June 30, and Aug. 31, 1927, respectively. After Aug. 31, 1927, all air mail in the United States was carried under contract.
[4] Estimated.
[5] Data not available.

Source: Aeronautics Branch, Department of Commerce.

Thirteen lines were engaged in scheduled passenger business in 1927, as compared with six in 1926. The average fare was 10.6 cents a passenger-mile, as compared with 14 cents in 1926. The number of passengers carried in special flights by these transportation lines during 1927 totaled over 34,500, in addition to the 8,572 carried on scheduled trips. It is noteworthy that by the end of the year a number of the companies had ordered larger and faster ships for passenger service, and it is expected that 1928 will see an important development in this phase of the business. Express was carried by 10 of the lines conducting scheduled flying on civil airways in 1927; this traffic amounted to 2,261,507 pounds, which was about 30 per cent more than in 1926.

COMMUNICATION

Business and industry have always relied heavily upon rapid and efficient systems of communication, and the increasing demands of the past few years have caused American companies to strengthen and expand their position as leaders in this sphere. The year 1927 witnessed many improvements and noteworthy events in the field of electrical communication, outstanding among which were the successful application of high-speed, short-wave directional radiotelegraphy; the inauguration of trans-Atlantic telephony on a commercial basis, and the extension of telephone service to Mexico; the International Radiotelegraph Convention; the formation of the Federal Radio Commission; and the incorporation of many improvements in the radio receiving set.

RADIO

International Radiotelegraph Convention.

Early uses of radio were confined to ship-to-shore services, but even in those days questions arose on the subject of interference which often were international in scope. It was obvious that some kind of regulatory power was necessary to deal with the problems raised, and the German Government invited other nations to attend a preliminary conference in Berlin. Representatives of 27 countries, including the United States, accordingly met in August, 1903, and formulated proposals to be used as the basis for a later conference. The second conference, in October, 1906, was likewise held in Berlin. The next convention, at which 43 countries were represented, was held in London in 1912; deliberations were again confined to marine communication.

A conference was scheduled for Washington in 1917, but the war and other events resulted in several postponements, and the convention did not meet until October 4, 1927. The intervening years had witnessed a tremendous expansion in the development and use of radio and it was evident that the London convention of 1912, dealing largely with marine services, was hopelessly antiquated and utterly inadequate to meet the existing needs.

The most important work of the Washington conference was the allocation of frequency or wave-length bands to the various radio services. This includes allocations for broadcasting; international point-to-point communication; mobile services, including ships, aircraft, and land stations which communicate with them; and operations by amateurs. The channels from 10 to 100 kilocycles have been reserved chiefly for long-distance transoceanic service; those from 100 to 500 kilocycles were set aside primarily for ship-to-shore and aircraft services; and the channels from 500 to 1,500 kilocycles have been set apart for broadcasting. The channels from 1,500 to

6,000 kilocycles have been apportioned into 40 different bands and divided between mobile services, communication between fixed stations, broadcasting, and amateur stations.

Regulations have been made covering each of the various services which were assigned to specific frequency bands. They have been clarified and defined in such a manner as will result in greater safety of life and property at sea. Regulations pertaining to communication between ships and shore are very stringent and facilitate the making of contacts between ships. Distress signals take priority over every other form of communication. The signal remains, as before, S O S, but provision has also been made for distress calls by radiotelephony, the call to consist of the spoken expression "Mayday."

Restriction has been put on the use of spark sets, which have been a source of much annoyance to broadcast listeners. The regulations adopted prohibit new installations of spark sets at coastal stations, and existing ones are to be converted to continuous-wave sets as soon as possible, an evolution which must be completed by January 1, 1935. Regulations have also been adopted covering spark installations and operation on board ships and aircraft.

In the convention are included general provisions providing for the secrecy of messages, intercommunication between coastal and ship stations, the mutual exchange of information necessary to facilitate international radio communication, the establishment of an International Consulting Committee on Radio Communication, the allocation of blocks of call letters to countries, and the compulsory settlement of disputes by arbitration.

The next international radiotelegraph conference will be held in Spain in 1932.

The Radio Acts of 1927 and 1928.

The radio act of 1927 created a Federal Radio Commission composed of five members. From one year after its first meeting, which was March 15, 1927, the commission was to become an appeal body. The act embraced the entire field of radio communication, but the greater portion of its work during the first year of existence centered in clarifying the chaotic situation in the broadcasting band. As the time for the expiration of the commission approached its work was far from finished and there was much agitation for its continuation. Another act has been passed by Congress providing for the extension of the commission to March 15, 1929, for the equitable distribution of station power, and for the limiting of licenses of broadcasting stations to three months and licenses of commercial stations to one year. It further states that terms of the commissioners shall be limited to one year, and makes the commission an appellate body from March 15, 1929.

About the 1st of January, 1928, the commission began a study of the short-wave situation, and, in cooperation with the Departments of State and Commerce, conducted a world-wide survey of the short-wave spectrum as a guide for making allocations in the United States. Short waves have an unusually wide range, and because of their skip-distance effect are potentially capable of causing interference in distant countries.

Radio Broadcasting Service.

On December 31, 1927, there were in operation in the United States 684 broadcasting stations, as compared with 719 such stations at the end of 1926 and 528 at the end of 1925. The Federal Radio Commission has endeavored to improve the broadcasting situation by issuing only short-term licenses to broadcasting stations and by making many changes of power and frequency.

Radio Communication.

The outstanding radio development of the year has been the practical utilization of high-speed directional short-wave radiotelegraphy, or the so-called "beam" system. The short-wave beam system is now in operation between New York and London, and a directive system known as the "RCA projector system" is now in operation on several circuits in the United States. New direct radio services were inaugurated in 1927 between the United States and many foreign countries.

Radio engineers have given continued attention to the transmission and reception of facsimile matter by radio. The commercial photo-radio services operated between New York and London and between San Francisco and Honolulu were regularly used by newspapers, department stores, and other classes of customers during the past year.

The gross receipts of ship-to-shore and transoceanic operations of the Radio Corporation of America in recent years are shown in the following table:

Service	1921	1922	1923	1924	1925	1926	1927
Ship-to-shore	$553,300	$630,084	$738,140	$742,345	$762,654	$874,215	$990,954
Transoceanic	2,139,000	2,914,283	3,191,558	3,358,584	3,418,179	3,632,626	3,934,367

Source: Annual report of the Radio Corporation of America.

TELEPHONES

Trans-Atlantic Radiotelephony.

The outstanding achievement in telephony for 1927 was the inauguration of commercial trans-Atlantic telephone service between New York and London on January 7. Within two months from the inception of this service it was extended to the entire United States,

England, Scotland, and Wales. In March it was made available to Cuba, and in October to five cities in Canada.

The scope of the present transoceanic telephone service has been widened until it now includes many of the principal cities of continental Europe in addition to those enumerated above.

As the result of the establishment of transoceanic telephone service a total of well over 2,500,000 oversea telephones has been brought within reach of the approximate 18,365,000 instruments of American subscribers.

September witnessed the establishment of telephone service between the United States and Mexico City, Tampico, and a number of other important cities in Mexico. Subsequently the Mexican service was extended to Cuba and Canada.

Expansion of Telephone Business.

The year 1927 showed a substantial expansion of telephone service in the United States. During the period under review 791,000 additional telephones were added to the Bell Telephone System, bringing the total number in the United States interconnected with the system to 18,365,000. Of this total number about 4,600,000 are operated by 8,900 independent connecting companies.

At the end of the year the American Telephone & Telegraph Co. sold to its associated companies the instruments it had been maintaining for them, and at the same time reduced the charge to its associated companies under its contract for services from 4 per cent to 2 per cent of the gross telephone revenues of those companies. The number of uncompleted calls was reduced by about 5 per cent, which means a more efficient handling of more than 200,000,000 calls a year.

Table 40.—American Telephone & Telegraph Co. and Associated Operating Companies: Comparative Statistics

NOTE.—All figures in thousands of miles, telephones, messages, or dollars. Mileage and number of telephones relate to December 31.

Item	1910	1915	1920	1922	1924	1925	1926	1927
Total wire mileage	11,642	18,506	25,377	30.617	39,894	45,474	50,861	56,823
Telephones owned	3,933	5,968	8,334	9,515	11,242	12,035	12,816	13,726
Connected telephones owned by other companies	1,950	3,204	4,268	4,536	4.664	4,685	4,758	4,639
Exchange messages daily	21,681	25,184	31,835	36,831	43,981	46,702	49,980	52,581
Toll messages daily	603	819	1,327	1,523	1,835	2,098	2,375	2,614
Gross revenue	165,613	239,910	461,135	564,038	677,903	761.219	844,546	916,587
Expenses and taxes	114,618	173,728	381,626	439,546	529,126	578,776	639,676	700,016
Net revenue	50,994	66,182	79,509	124,492	148,777	182,444	204,870	216,571

Source: Annual reports of the American Telephone & Telegraph Co.

More than 1,246,000 miles of toll wire were added to the Bell system during 1927. The system now owns 7,543,000 miles of such wire, connecting about 70,000 cities, towns, and villages throughout the

country. It is claimed that the average length of time for handling a toll call was reduced from two minutes in 1926 to one and one-half minutes in 1927.

Effective December 1, 1927, a further reduction was made in long-distance rates. Improved service, together with cheaper rates, has naturally tended to increase the volume of long-distance traffic.

Improvements in Telephone Service.

During the year there was made available to the public a type of telephone instrument having the receiver and transmitter on a single handle. Production costs for the new type are somewhat higher, and the new instruments are supplied, for an extra charge, to subscribers who desire them.

There was an increase of 65,000 miles of carrier-current circuits in 1927. By this method a number of independent telephone conversations may be carried on simultaneously over a single pair of wires. Over 100,000 additional miles of such circuits are planned for 1928.

At the end of the year 2,550,170 telephones, or 18 per cent of the total directly owned telephones of the Bell system, were served by machine-switching central offices. This compared with a total of 1,975,000 telephones, or 15 per cent, at the end of 1926.

The first demonstration of television over telephone circuits was made in April, 1927, and television by radio was demonstrated later.

LAND TELEGRAPHS

During 1927 the Postal Telegraph continued to expand the use of printer apparatus to replace Morse operations. A large number of trunk-line circuits have been equipped with what are known technically as "drop channel" sets, by means of which it has been possible to provide many additional direct circuits for use between intermediate trunk-line points and terminal offices without stringing additional wire. Improvements which substantially reduce the maintenance cost of trunk-line printers and improve and stabilize their performance have also been made during the year and applied to all printer trunk-line circuits. Tape printers for use in main and branch offices and for use at customers' offices, where a large volume of business originates, have been perfected and are now being generally applied.

Gross operating revenues of the Western Union Telegraph Co. for 1927 were 2 per cent less than in 1926. About 92 per cent of the operating revenues were from the land-line system. The automatic multiplex telegraph system, superseding manual operation and providing increased circuit capacity, was extended and improved. At the end of 1927 about 70 per cent of the company's land-line telegraph business was handled automatically, as compared with about 66 per cent for 1926. The simplex printing telegraph system intro-

duced in 1926, providing for automatic transmission of messages between main and branch offices, is now in successful operation in 25 important centers.

On December 31, 1927, the Western Union system maintained 214,799 miles of pole lines, 1,747,453 miles of wire (of which 62 per cent is copper), 3,419 miles of land-line cables, 29,092 nautical miles of ocean cables, and 24,765 telegraph offices.

OCEAN CABLES

Cable revenues of the Western Union Telegraph Co. declined about 2 per cent in 1927, although the number of words transmitted over its ocean cables increased about 6 per cent. The decline in revenues may be partially attributed to reductions in rates for press messages and the increasing use of deferred services. The cable rate on press messages between New York and Great Britain was reduced (effective February 15, 1927) about 29 per cent.

The growth of cable traffic with Italy, Spain, Germany, and the Far East requires additional cable facilities. The Western Union has arranged to lay a high-speed permalloy cable between Bay Roberts, Newfoundland, and Horta, Azores, which will supplement the present high-speed permalloy New York-Azores cable laid in 1924, and contemplates the laying of a modern high-speed cable across the Pacific, connecting the Far East with the United States and Europe.

The Commercial Cable Co. handled a substantially increased volume of cable traffic during 1927. Every possible improvement is being installed to increase the capacity of its cable circuits with the view of reducing operating costs. Regenerative relays have now been installed at all the cable repeater stations of the company, with marked advantage in the improvement of signals and with further advantage in the flexibility of circuits which permits the effective linking up of sections in ways that were not formerly possible. The installation of "phantom" circuits on the Western-Waterville cables and the Newfoundland-Canso cables has provided alternative routes which can be used as links in the through-working circuits during times of interruption of one of the physical cables or as supplemental circuits.

All America Cables (Inc.) opened several new offices in 1927. Effective August 1, 1927, substantial reductions were made in the cable rates between the United States and South America.

The International Telephone & Telegraph Corporation in 1927 acquired control of All America Cables (Inc.), the Montevideo Telephone Co. (Ltd.), and the Chile Telephone Co. (Ltd.), and announcement was made early in 1928 of its merger with the Mackay companies (Postal Telegraph Co., Commercial Cable Co., and others). The consolidated income of the system in 1927 was over twice as large as in 1926, amounting to $14,413,000.

BANKING AND FINANCE

SUMMARY.—In 1927 there was continued growth in the volume of practically every kind of financial transaction; but, except in the stock market, it was a growth so sound and gradual as to be without great general interest.

A growth of one-twentieth during a single year in the combined assets of all American banks would be noteworthy if we had not become used to such rapid expansion. The trend toward fewer and larger banks was more marked last year than in any previous year. More notable, perhaps, was the banks' return to the tendency of a few years ago of increasing investments more rapidly than loans. The increase in time deposits was record breaking, while the increase in demand deposits was quite normal.

Because of the large international gold movements in 1927, the Federal reserve bank statements revealed very sharp changes. During the last 11 months of the year the bills and securities held by the 12 banks increased by 51 per cent and their holdings of Federal Government obligations doubled. The "earmarking" of gold for foreign account reached a record-breaking volume in 1927; and statistics on these relatively new transactions were issued for the first time.

Check payments increased by 11 per cent in 1927, but a large part of this increase can be attributed to the record-breaking stock-market activity. Checks drawn on "out-of-town" banks increased only 5 per cent.

Throughout 1927 bank credit was ample. Money rates were stable, at a low level, but there was a slight softening in rates in the latter half year. All the reserve banks reduced their rates from 4 to 3½ per cent in July, August, and September. The range in collateral rates from 4¼ to 5 per cent was probably narrower than in any previous year. The aggregate of $9,871,000,000 for capital issues and the $1,719,000,000[1] of foreign issues included were both records, created chiefly by the low and stable money rates. Bankers' acceptances outstanding reached a record volume—a development highly gratifying to those who have striven so long to improve the facilities of our open discount market.

The rise of foreign exchange rates was especially noteworthy. More than a dozen foreign currencies closed the year above mint par and a few of them had risen above the gold-export point. During 1927 at least seven countries established their currencies on the gold standard.

Stock-market speculation was most pronounced; 1927 was a year of swiftly rising security prices, without any setback worth mentioning. Both stocks and bonds reached new high levels for all time and about one-half of the increased loans by all banks were in the form of brokers' collateral loans.

During the fiscal year 1926–27 the United States Government had the largest ordinary surplus in its history and debt retirements exceeded $1,100,000,000. Customs receipts established a new high level. War-debt receipts by the Treasury totaled $206,000,000 during the calendar year.

The invisible items in our balance of international payments, other than our foreign loans, show no important changes. The yield of our foreign investments increased by about $60,000,000 and our payments for freight service diminished by about $31,000,000. On the other hand, American tourist expenditures increased by about $50,000,000. Foreigners seem to have bought American-held securities more heavily than in most years.

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[1] As compiled by the Commercial and Financial Chronicle. Foreign issues as compiled by the Bureau of Foreign and Domestic Commerce amounted to $1,593,000,000.

BANKING SITUATION

Magnitude and Growth of American Banks.

The magnitude of American banking enterprise is indicated by Table 1, which shows that on June 30, 1927, American banks held assets valued at more than $68,000,000,000. This exceeds the estimated national wealth of any foreign nation, except Germany and the United Kingdom. There has been very great growth of the American banking business in recent years; bank resources in 1927 were, in fact, over 35 per cent larger than five years earlier. The growth during the fiscal year 1927 was 5 per cent, as against 4.6 per cent in 1926.

Table 1.—Principal Items of Resources and Liabilities of National and All Other Reporting Banks Except Federal Reserve Banks, on or About June 30

[In millions of dollars]

Item	1913	1920	1921	1922	1923	1924	1925	1926	1927
Capital, surplus, and undivided profits [1]	4,347	6,089	6,357	6,575	6,806	7,053	7,411	7,873	8,343
National banks	2,046	2,757	2,796	2,848	2,876	2,916	3,030	3,154	3,310
State banks, etc.[2]	2,301	3,332	3,560	3,727	3,930	4,137	4,380	4,719	5,033
Deposits (individual)	17,279	37,315	34,845	37,194	40,034	42,954	46,766	48,882	51,133
National banks	5,831	13,705	12,406	13,264	14,043	14,853	16,355	17,092	18,239
State banks, etc.[2]	11,449	23,610	22,439	23,930	25,991	28,101	30,411	31,790	32,893
Loans and discounts [3]	14,627	31,317	29,014	27,935	30,475	31,484	33,934	36,283	37,567
National banks	6,162	14,053	12,253	11,434	12,015	12,125	12,860	13,660	14,219
State banks, etc.[2]	8,465	17,264	16,761	16,501	18,459	19,359	21,074	22,623	23,348
Investments	5,407	11,388	11,382	12,548	13,673	14,229	15,400	15,815	17,255
National banks	1,890	4,186	4,025	4,563	5,070	5,142	5,730	5,842	6,393
State banks, etc.[2]	3,518	7,201	7,357	7,984	8,603	9,086	9,670	9,973	10,862
Total resources	25,712	53,079	49,671	50,425	54,035	57,145	62,057	64,893	68,133
National banks	11,037	23,411	20,518	20,706	21,512	22,566	24,351	25,316	26,582
State banks, etc.[2]	14,675	29,668	29,154	29,719	32,523	34,579	37,706	39,578	41,551

[1] Includes reserve for taxes, interest, etc., accrued.
[2] Includes State (commercial), savings, private banks, and loan and trust companies.
[3] Includes overdrafts and also acceptances reported by national banks.
Source: Comptroller of the Currency, Treasury Department.

The reporting banks whose statistics are totaled in Table 1 include savings banks, trust companies, and private banks, but do not include the 12 Federal reserve banks, because the inclusion of their resources would be largely duplication. Totals already contain extensive duplications resulting from redeposits.

In 1926 the growth of investments was much slower than the growth of loans and discounts, which resulted in a trend toward enhanced liquidity of earning assets. Last year, however, investments increased faster, both absolutely and relatively, than loans and discounts—the ratios of increase being 9.1 per cent and 3.5 per cent, respectively. This is not usually regarded as a healthful development.

Table 2 shows the growth of American banking enterprise over a much longer period. During the past 35 years the number of our banks has nearly trebled. The financial items shown in the table

were all more than nine times as great in 1927 as they were at the beginning of the period. In the early nineties the average amount of deposits held per bank was about $493,000; now it is about $1,890,000.

Table 2.—Certain Principal Resources and Liabilities of All Reporting Banks Other Than Federal Reserve Banks

[Amounts in millions of dollars]

Yearly average or year [1]	Number of banks	Loans and discounts [2]	Securities held	Individual deposits [3]	Year [1]	Number of banks	Loans and discounts [2]	Securities held	Individual deposits [3]
1891–1895	9,359	4,210	1,368	4,612	1920	30,139	31,208	11,388	37,315
1896–1900	9,705	4,773	1,989	5,947	1921	30,812	28,932	11,382	34,845
1901–1905	13,755	7,625	3,381	9,694	1922	30,389	27,860	12,548	37,194
1906–1910	20,923	10,948	4,456	13,498	1923	30,178	30,417	13,673	40,034
1911–1915	25,881	14,491	5,457	17,399	1924	29,348	31,428	14,229	42,954
1916–1920	28,716	23,586	9,632	29,269	1925	28,841	33,884	15,400	46,766
1921–1925	29,914	30,504	13,446	40,359	1926	28,146	36,233	15,815	48,882
1913	25,993	14,568	5,407	17,279	1927	27,061	37,524	17,255	51,133
1919	29,123	25,255	12,230	32,665					

[1] The yearly data are as of June 30 in practically every year.
[2] Including rediscounts; and acceptances reported by national banks.
[3] Beginning 1911, includes dividends unpaid and excludes certified checks and cashiers' checks; also includes postal savings beginning 1913.
Source: Comptroller of the Currency, Treasury Department.

The trend toward fewer and larger banks has been very strong in recent years. The United States now has about 3,750 fewer banks than in 1921. The swiftest reduction occurred last year, when more than 1,000 banks closed or were merged. Merging has been facilitated by legislation permitting branch banks. With the increasing number of very large business corporations, many financiers believe that there is need of larger and larger banks. Banks that fail are nearly always very small ones. Thus, the average of the liabilities of the banks which failed in 1927 was only about $340,000. About two-thirds of them had a capital of $25,000 or less and about two-thirds were located in villages of less than 1,000 inhabitants.

NATIONAL BANKS

At the end of 1927 (Table 3) more than one-fourth of our banks were operating with Federal charters under the national bank act. This system of 7,765 banks had about 40 per cent of the bank assets of the Nation. During the calendar year the number of national banks diminished by 147, net. The number of new national bank charters issued during the year ended October 31 was 135, which chanced to equal exactly the number that failed. Voluntary closings numbered 165.

The year saw an extraordinary increase in time deposits in the national banks. Time deposits increased by $1,275,000,000, or 19.5 per cent, while demand deposits increased by only $493,000,000, or 4.5 per cent. This tendency for time deposits to increase more

rapidly than demand deposits has been evident for a number of years, but it was strongest in 1927. It reflects the liquidity of trade and industry, which instead of borrowing at the bank (creating demand deposits) have virtually carried cash reserves in the form of time deposits. In 1913 demand deposits were nine and one-half times as great as time deposits, and as late as 1920 nearly three times as great; but in 1927 they were only 46 per cent greater.

Any increase in the ratio of time to demand deposits, or any important growth in the capital and surplus of banks, tends to increase the ratio of investments to loans and discounts. The latter ratio has, however, remained between 42 and 45 per cent ever since 1922. In 1927 national-bank capital, surplus and undivided profits, and time deposits increased by $1,544,000,000, while securities owned by national (and "other member") banks increased by only $1,371,000,000.

It will be noted that the national banks, as a group, have surpluses, including undivided profits, materially exceeding their capital. Furthermore, their surpluses have been growing faster than their capital.

Table 3.—National Banks: Number and Principal Resources and Liabilities

[Amounts in millions of dollars. For wholesale price index, 1913=100]

Yearly average or year [1]	Number of banks	Total resources	Loans and discounts [2]	Capital	Surplus and undivided profits	Demand deposits [3]	Time deposits [4]	National bank circulation	Wholesale price index [5]
1911–1915	7,467	11,194	6,224	1,051	973	5,223	720	754	98.2
1916–1920	7,774	19,011	10,506	1,129	1,222	8,584	2,596	678	186.2
1921–1925	8,159	22,050	12,052	1,325	1,608	9,580	4,834	707	151.6
1913	7,488	10,877	6,187	1,056	985	5,226	553	724	100.0
1919	7,821	22,056	11,542	1,138	1,301	10,270	2,921	682	206.4
1920	8,093	23,176	13,724	1,248	1,456	10,089	3,560	693	226.2
1921	8,155	19,719	11,695	1,276	1,566	8,463	3,681	705	146.9
1922	8,240	20,926	11,248	1,307	1,581	9,416	4,169	727	148.8
1923	8,239	21,713	11,948	1,332	1,591	9,433	4,864	731	153.7
1924	8,074	23,323	12,222	1,333	1,631	9,984	5,461	724	149.7
1925	8,085	24,570	13,149	1,375	1,669	10,603	5,994	649	158.7
1926	7,912	25,684	13,583	1,411	1,694	10,907	6,533	646	151.0
1927	7,765	28,164	14,842	1,529	1,845	11,400	7,808	650	146.8

[1] As of about Sept. 1 prior to 1924; as of Oct. 10 for 1924, Sept. 28 for 1925, and Dec. 31 for 1926 and 1927.
[2] Includes rediscounts and overdrafts.
[3] Includes United States deposits and, prior to 1927, dividends unpaid; excludes certified and cashiers' checks.
[4] Includes postal savings.
[5] Average for calendar year.

Source: Comptroller of the Currency, Treasury Department.

FEDERAL RESERVE SYSTEM

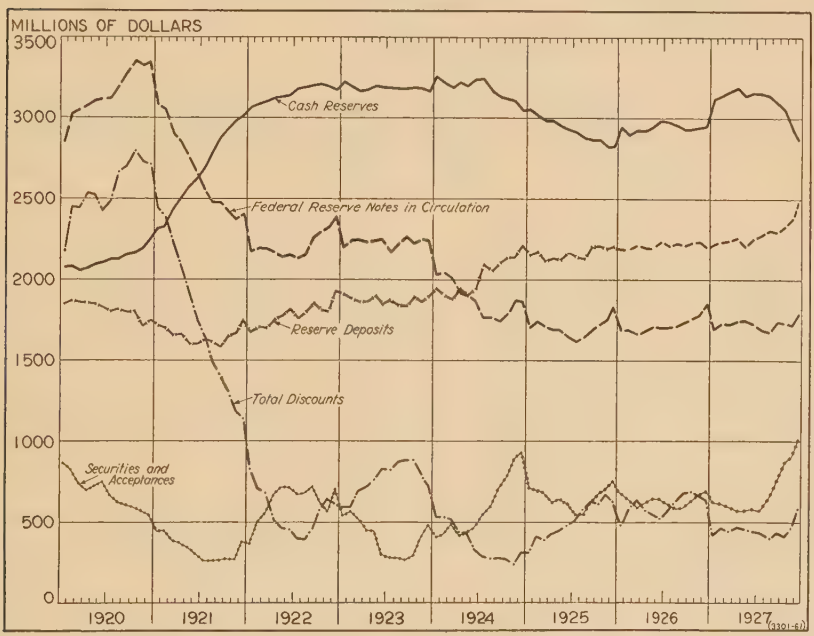
The Federal reserve system includes, besides the national banks, about 1,275 financial institutions with State charters. These 9,034 member banks are shareholders in 12 regional, or reserve, banks, and the whole system is controlled by the Federal Reserve Board, the members of which are appointed by the President of the United States. The outstanding event in regard to the system during the

year was the granting by Congress of indeterminate charters to the reserve banks by the act approved on February 25, otherwise the charters would have expired in 1934.

Federal Reserve Banks.

Table 4 shows selected items from the balance sheets of the 12 regional banks of the Federal reserve system. The total capital of these banks, about $133,000,000, is owned by the member banks in their respective regions, and their aggregate surplus is about $233,-

Chart I.—CONDITION OF FEDERAL RESERVE BANKS



000,000. Profits in excess of 6 per cent go to surplus or to the Treasury as "franchise tax."

After a very uneventful year in1926, the accounts shown in Table 4 underwent some striking changes in 1927. "Reserve bank credit outstanding," consisting of "bills" and United States securities, increased by 19.2 per cent. Bill holdings actually decreased by about 4 per cent, but holdings of Government securities nearly doubled, so that at the end of the year the reserve banks owned about 3.5 per cent of the total interest-bearing obligations of our Federal Government. The deposits of member banks increased by 13.3 per cent, Federal reserve notes in circulation diminished by 3.4 per cent, and the gold ratio diminished from 71.4 per cent to 66.4 per cent.

These changes resulted chiefly from the large international gold movements in 1927. Nearly all the purchases of Government securi-

ties occurred during the second half year, when the country lost more than $200,000,000 of its gold stock through exports and earmarking operations. The reserve banks prevented a corresponding contraction of credit by buying Government securities. Early in the year the gold inflow from abroad was very strong; as a result, at the end of July "reserve bank credit" was at its lowest level in about two years. During the last five months of the year it increased by about 58 per cent.

Table 4.—Principal Assets and Liabilities of Federal Reserve Banks

[Amounts in millions of dollars. Total bills and securities includes minor items not specified]

Date	Bills and securities				Total reserves for notes and deposits [1]	Member bank reserve deposits	Federal reserve notes in circulation	Federal reserve ratio (per cent) [2]
	Total ("reserve bank credit")	Bills discounted	Bills bought in open market	United States Government securities				
Dec. 31:								
1917 [3]	1,064	681	275	107	1,721	1,453	1,246	63.6
1918 [3]	2,318	1,703	304	312	2,146	1,587	2,685	50.6
1919 [3]	3,080	2,195	585	300	2,136	1,787	3,058	44.8
1920 [3]	3,263	2,719	256	288	2,249	1,749	3,345	45.4
1921	1,524	1,144	145	234	3,010	1,753	2,409	70.2
1922	1,326	618	272	436	3,177	1,934	2,396	72.7
1923	1,211	723	355	134	3,169	1,898	2,247	75.3
1924	1,249	314	387	540	3,047	2,220	1,862	73.0
1925								
Mar. 31	1,083	398	313	360	2,986	2,114	1,714	76.6
June 30	1,100	480	254	353	2,933	2,172	1,651	75.7
Sept. 30	1,257	633	268	343	2,866	2,210	1,685	72.5
Dec. 31	1,395	635	374	375	2,824	2,212	1,838	69.0
1926								
Mar. 31	1,226	632	250	330	2,920	2,215	1,656	73.4
June 30	1,158	515	249	385	2,980	2,229	1,697	75.3
Sept. 30	1,270	681	280	304	2,920	2,209	1,731	72.8
Dec. 31	1,335	637	381	315	2,948	2,194	1,851	71.4
1927								
Jan. 31	1,053	425	321	304	3,117	2,218	1,704	78.3
Feb. 28	1,084	470	296	316	3,130	2,229	1,727	77.8
Mar. 31	1,040	451	239	348	3,168	2,237	1,724	78.8
Apr. 30	1,044	477	238	327	3,187	2,257	1,744	78.8
May 31	1,032	459	228	343	3,138	2,197	1,748	78.3
June 30	1,025	443	211	370	3,156	2,249	1,721	78.2
July 31	1,008	442	172	392	3,152	2,277	1,688	78.4
Aug. 31	1,059	401	185	473	3,146	2,299	1,676	78.3
Sept. 30	1,194	437	250	506	3,095	2,293	1,736	75.8
Oct. 31	1,276	412	342	522	3,054	2,324	1,734	74.1
Nov. 30	1,381	477	355	548	2,940	2,379	1,717	71.2
Dec. 31	1,591	582	392	617	2,867	2,487	1,790	66.4

[1] Includes both gold and legal-tender notes and silver except subsidiary silver beginning 1923.
[2] Ratio of total reserves to combined total deposits (net deposits prior to 1921) and Federal reserve note circulation.
[3] Figures for 1917 to 1920 relate to last Friday of year.
Source: Federal Reserve Board.

Table 4 shows, also, that the business of the Federal reserve banks is now much smaller than at the peak of postwar inflation in 1920. At that time earning assets were more than double the present figure. This is in sharp contrast with most American banking statistics, which show new high records in each of the last three years.

The contraction in reserve bank assets (credit) may be taken as a symptom of healthy growth in the American banking community as a whole. It indicates a lack of real tension in credit.

Analysis of Federal Reserve Discounts.

The reduction in bills held by the reserve banks during 1927 is analyzed in Table 5. All items declined except member-bank "collateral notes secured by Government obligations." The total value of rediscounted bills showed a decrease in each quarter of the year, and on December 31 was only about one-half as large as a year earlier.

Table 5.—Federal Reserve Bank Holdings of Discounted Bills, by Classes

[In millions and tenths of millions of dollars]

Date	Rediscounted bills					Member bank collateral notes		Summary	
	Total holdings	Commercial and agricultural paper	Bankers' acceptances	Trade acceptances	Secured by United States Government obligations	Secured by United States Government obligations	Otherwise secured	Secured by United States Government obligations	All other
Dec. 28, 1917	680.7	309.5	(1)	(1)	132.8	150.6	87.8	283.4	397.3
Dec. 27, 1918	1,702.9	265.0	(1)	16.0	363.0	1,037.8	21.6	1,400.4	302.6
Dec. 26, 1919	2,194.9	627.1	15.5	33.7	352.6	1,157.8	8.3	1,510.4	684.5
Dec. 30, 1920	2,719.1	1,521.5	17.2	21.4	271.5	869.5	17.9	1,141.0	1,578.1
Dec. 31, 1921	1,144.3	631.0	.3	10.0	41.5	443.7	17.8	485.2	659.1
Dec. 30, 1922	617.8	270.8	.3	4.8	3.6	328.2	10.0	331.8	286.0
Dec. 31, 1923	723.1	355.8	.2	7.0	3.9	349.8	6.3	353.7	369.4
Dec. 31, 1924	314.1	102.1	----	3.4	1.3	185.6	21.8	186.8	127.3
1925									
Mar. 31	397.8	139.7	----	3.0	1.1	206.5	47.6	207.6	190.2
June 30	480.5	180.9	----	2.5	1.1	244.2	51.8	245.3	235.1
Sept. 30	633.2	205.7	----	2.3	1.0	315.8	108.4	316.8	316.4
Dec. 31	635.2	177.3	----	3.4	1.9	380.3	72.4	382.2	253.0
1926									
Mar. 31	632.4	213.0	.1	2.8	2.1	309.4	105.0	311.5	320.9
June 30	515.0	196.6	(2)	2.9	1.4	251.5	62.6	252.9	262.1
Sept. 30	681.3	231.8	.1	2.9	1.3	330.8	114.5	332.1	349.3
Dec. 31	636.6	171.0	----	2.8	1.1	364.2	97.6	365.3	271.3
1927									
Mar. 31	451.2	148.2	.1	2.3	1.3	240.8	58.4	242.1	209.1
June 30	443.4	143.6	----	2.1	2.6	242.8	52.3	245.4	198.1
Sept. 30	437.4	115.6	.1	1.9	.8	229.4	89.7	230.1	207.3
Dec. 31	581.5	88.0	----	1.4	.2	417.6	74.4	417.7	163.8

[1] Included with "Commercial and agricultural paper." [2] Less than $50,000.

Source: Federal Reserve Board.

Selected Member Banks—Monthly Data.

While the data published by the Comptroller of the Currency cover practically all the commercial banks of the country, they are only collected a few times in the course of a year. More regular statistics are obtained by the Federal Reserve Board, which for several years has sampled the general banking situation of the country by compiling weekly the reports of some 700 to 800 member banks. (Table

6.) These banks are located in the leading cities; and in June, 1927, their earning assets were 38 per cent of the earning assets of reporting banks of all classes other than the 12 reserve banks. (Table 2.)

Because the number of reporting banks has changed (804 in January, 1920, and 657 in December, 1927, the decrease being due mainly to merging of banks), it is safer to interpret the statistics of "reporting member banks" by ratios. Moreover, the secular trend in American banking has been so strong that seasonal movements in our banking operations can be established and measured only by advanced statistical methods. The December figures for the last four years show that the ratio of investments to loans and discounts declined from 42.3 per cent in 1924 to 38.4 per cent in 1925 and 38 per cent in 1926, but rose again to 41.4 in 1927.

Table 6.—Loans and Investments and Net Demand Deposits of Reporting Member Banks of the Federal Reserve System in Leading Cities

[In millions of dollars. See text as to number of banks covered]

Last weekly closing in—	Total loans and investments							
	1920	1921	1922	1923	1924	1925	1926	1927
January	16,632	16,254	14,534	16,289	16,364	18,540	19,426	19,740
February	16,671	16,099	14,542	16,330	16,374	18,538	19,422	19,761
March	16,819	15,983	14,544	16,498	16,580	18,618	19,546	20,273
April	16,930	15,603	14,711	16,473	16,656	18,716	19,525	20,277
May	16,946	15,345	15,029	16,490	16,610	18,593	19,579	20,473
June	16,932	15,331	15,188	16,543	16,969	18,710	19,816	20,768
July	16,860	14,889	15,189	16,344	17,252	18,723	19,627	20,479
August	16,930	14,759	15,294	16,244	17,515	18,846	19,684	20,624
September	17,140	14,957	15,454	16,422	18,008	19,272	20,029	20,984
October	17,017	14,729	15,790	16,474	18,315	19,345	19,892	21,085
November	16,732	14,765	15,761	16,368	18,487	19,364	19,849	21,544
December	16,750	14,780	16,152	16,490	18,599	19,697	20,110	21,820

Last weekly closing in—	Loans and discounts			Investments			Net demand deposits		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
January	13,051	13,949	14,200	5,488	5,477	5,540	13,014	13,034	12,879
February	13,143	13,930	14,147	5,396	5,492	5,615	12,932	12,935	12,818
March	13,140	14,052	14,359	5,478	5,495	5,914	12,588	12,901	13,006
April	13,232	13,949	14,353	5,484	5,576	5,924	12,814	12,829	13,041
May	13,108	13,874	14,429	5,485	5,705	6,044	12,645	12,917	13,192
June	13,205	14,135	14,718	5,505	5,681	6,050	12,725	13,252	13,381
July	13,217	13,976	14,488	5,506	5,652	5,992	12,818	12,846	13,200
August	13,375	14,069	14,697	5,471	5,615	5,927	12,755	12,835	13,349
September	13,832	14,395	14,942	5,440	5,634	6,042	13,046	13,003	13,230
October	13,901	14,314	15,020	5,443	5,578	6,064	13,082	12,918	13,402
November	13,959	14,325	15,214	5,405	5,524	6,329	13,025	12,884	13,954
December	14,235	14,569	15,433	5,462	5,541	6,386	13,261	13,082	13,786

Source: Federal Reserve Board.

All Member Banks.

The condition of all the member banks of the Federal reserve system is shown in Table 7, quarterly or semiannually for the last seven years. This group of banks includes, besides the national banks,

those institutions under State charters which have become members of the system. Their total resources represent about two-thirds of the aggregate for all banks of the country.

During the year the number of member banks declined by 226, but the total resources increased by $2,858,000,000, or 6.8 per cent. There has been a rapid growth in all recent years except 1926. New high records were made in 1927 for every important item of the resources and liabilities.

The peak for loans and discounts in the immediate postarmistice period was $20,080,000,000—on November 15, 1920. This total was exceeded for the first time at the last call in 1924 and was surpassed by a widening margin at most of the calls since then. At the end of 1927 bill holdings were more than one-fifth greater than at the 1920 peak. Thus, our banking power has grown so rapidly that the commercial credit outstanding is much greater now, in a more or less normal period, than during the stress of our last important period of inflation, when buying power of money was much less than at present (the price index in November, 1920, was 196.4).

Table 7.—Condition of Member Banks of the Federal Reserve System

[Amounts in millions of dollars. For wholesale price index, 1913=100]

Date	Number of banks	Total resources	Loans and discounts [1]	United States Government securities [2]	Other securities [2]	Capital, surplus, and undivided profits [3]	Demand deposits [4]	Time deposits	Wholesale price index [5]
1921:									
June 30	9,745	30,936	18,206	2,661	3,444	4,133	14,246	6,367	141.6
Dec. 31	9,779	30,114	17,484	2,648	3,513	4,093	13,921	6,451	139.8
1922:									
June 30	9,892	31,724	17,296	3,247	3,815	4,214	15,191	7,175	149.6
Dec. 29	9,859	33,883	18,081	3,788	3,899	4,364	16,135	7,645	156.2
1923:									
June 30	9,856	33,795	18,880	3,870	3,925	4,367	15,458	8,378	153.5
Dec. 31	9,774	35,239	19,052	3,641	4,045	4,378	16,324	8,651	151.0
1924:									
June 30	9,650	35,777	19,264	3,608	4,390	4,486	16,472	9,204	144.6
Dec. 31	9,587	38,987	20,181	3,903	4,942	4,532	18,009	9,805	157.0
1925:									
June 30	9,538	39,105	20,814	3,802	5,086	4,690	18,021	10,381	157.4
Dec. 31	9,489	41,425	22,275	3,761	5,163	4,678	19,355	10,653	156.2
1926:									
April 12	9,412	40,075	22,006	3,831	5,233	4,826	18,066	10,955	151.1
June 30	9,375	40,845	22,267	3,745	5,378	4,832	18,570	11,173	152.3
Dec. 31	9,260	42,030	22,907	3,389	5,601	4,944	19,014	11,440	147.2
1927:									
Mar. 23	9,144	41,118	22,532	3,835	5,787	5,086	18,026	11,818	145.3
June 30	9,099	42,810	23,149	3,796	6,022	5,147	19,017	12,210	143.7
Oct. 10	9,087	43,156	23,492	3,856	6,103	5,295	18,788	12,459	150.1
Dec. 31	9,034	44,888	24,318	3,978	6,383	5,341	19,277	12,765	149.1

[1] Including rediscounts and overdrafts.
[2] Includes securities borrowed by national banks, prior to June 30, 1926.
[3] Includes amounts reserved for taxes, interest, etc., accrued, prior to Sept. 28, 1925.
[4] Including certified and cashiers' or treasurers' checks and United States deposits.
[5] For month stated in stub.

Source: Federal Reserve Board.

During 1927 member-bank holdings of Government securities increased by nearly $600,000,000. The amount at the end of the year was $3,978,000,000, or 22.5 per cent of the total interest-bearing

debt of our Government, while, as stated, the holdings of the reserve banks were 3.5 per cent. The reasons for this increase will be found in the decline of money rates to a level around that of the yield on Government bonds and, more directly, in the very slack borrowing by the mercantile community.

Member-bank holdings of "other securities" increased during 1927 by almost $800,000,000, as a result of the same causes. As most of the securities held are unusually stable in value, the increase in relatively unliquid assets is far less perilous than might be adjudged at a glance. Again, the increase in total security holdings was only about 80 per cent of the increase in capital and surplus plus time deposits.

BANKERS' ACCEPTANCES

Until last year the record volume of bankers' acceptances outstanding in our market was approximately $1,000,000,000. That record was achieved very early in 1920—in a period of abnormally large foreign trade and high prices. Despite the active educational campaign of the American Acceptance Council to increase the use of bankers' and trade acceptances, the volume of the former declined in 1922 to much less than one-half the peak volume. The new record volume of $1,081,000,000 for bankers' acceptances at the end of 1927, shown in Table 8, was 43 per cent larger than a year earlier. The amount tends to be smallest in the middle of the year, before the crop exports begin.

Table 8.—Bankers' Acceptances Outstanding Each Month, 1925 to 1927

[In thousands of dollars]

Last business day of—	1925	1926	1927	Last business day of—	1925	1926	1927
January	834, 825	788, 254	773, 604	July	569, 386	600, 487	741, 258
February	808, 359	767, 127	785, 488	August	555, 167	582, 635	782, 055
March	800, 137	745, 660	809, 446	September	607, 025	614, 151	863, 823
April	757, 074	720, 611	810, 966	October	674, 168	681, 647	975, 167
May	680, 346	685, 333	774, 720	November	689, 768	726, 395	1, 029, 490
June	607, 942	621, 949	751, 270	December	773, 736	755, 360	1, 080, 581

Source: American Acceptance Council.

The following comments on this new success in the acceptance campaign are excerpted from the Acceptance Bulletin of January 31, 1928: "In the volume of business financed by bankers' acceptances 1927 was a most important year. More than $6,000,000,000 worth of American commerce was financed by the acceptance method, or over $1,000,000,000 more than in any previous year. In a year when the banks of the country were amply supplied with funds and when rates for loans were proportionately low such a record is highly significant as showing the tendency to consider acceptance credits the [illegible]ical, practical, and most economical method of finance for American

foreign commerce. * * * Upward of $300,000,000 of foreign money was kept regularly employed in our bill market, a tribute of confidence in the facility of our open discount market as well as in the security of our banks' obligations.

"The real explanation for the growing volume of bankers' acceptances may be found in the increased prestige of dollar credits abroad, the long-prevailing spread in interest rates between New York and London, and the better understanding of bankers' acceptances by American international merchants, whose foreign trade requires the lowest priced and most easily handled form of credit. * * * Aside from the question of rates, foreign buyers of American goods now expect to settle with American dollars, and when the cost is in our favor, as it has been the last year, there should be no surprise when our volume of acceptance credit increases."

Table 9 shows the distribution of bankers' acceptances outstanding by the 12 Federal reserve districts. As usual, the New York district came first, with 73.2 per cent of the total outstanding at the end of 1927, and the Boston district came second, with 12.8 per cent. Chicago and San Francisco each held about 3.5 per cent of the total. All 12 districts showed gains over 1926, except the Minneapolis district.

Table 9.—Bankers' Acceptances Outstanding

[In thousands of dollars. The total outstanding Apr. 1, 1920, was $799,001,000; 1921, $644,092,000]

Federal reserve district	Apr. 1						Dec. 31	
	1922	1923	1924	1925 [1]	1926 [1]	1927 [1]	1926	1927
Total	**416,422**	**523,708**	**617,581**	**800,137**	**745,660**	**809,446**	**755,360**	**1,080,581**
1. Boston	45,450	77,152	74,874	98,833	95,992	90,406	81,630	137,880
2. New York	285,595	359,247	426,140	564,217	544,948	599,681	562,711	790,792
3. Philadelphia	10,103	12,226	11,735	15,791	9,678	13,132	8,295	16,183
4. Cleveland	9,548	5,000	13,465	11,876	12,288	10,390	9,819	15,148
5. Richmond	5,459	3,834	4,876	13,795	11,511	10,193	10,274	12,890
6. Atlanta	10,727	7,249	18,602	16,004	14,324	15,477	13,224	17,436
7. Chicago	36,197	32,514	40,390	48,354	27,221	28,135	28,819	37,880
8. St. Louis	908	1,874	1,536	1,145	835	564	1,491	2,307
9. Minneapolis	1,928	3,808	5,911	4,951	3,626	1,752	4,701	2,530
10. Kansas City	1,687		590		50	152	125	459
11. Dallas	734	607	481	2,993	2,351	5,584	8,030	9,586
12. San Francisco	8,085	20,198	19,983	22,180	22,833	33,980	26,240	37,488

[1] Mar. 31.

Source: American Acceptance Council.

MONEY RATES

Table 10 shows the monthly range of discount rates of the 12 Federal reserve banks for the past eight years and indicates the downward sweep of these rates from the fiscal year 1920–21 to the end of 1924. All of the reserve banks, except that at New York, held their rates at 4 per cent throughout 1926. The reduction to 3½ per cent, beginning in July and August of 1927, was made because it was felt th

"with the serious credit stringency in Europe, easy money here would help foreign countries to meet their autumn demand for credit and exchange without unduly depressing their exchanges or increasing the cost of credit." It was believed that this increasing of the differential between American and European discount rates would move short-term funds across to Europe, create easier credit conditions there, aid the foreigner in financing his seasonal purchases here, and thus benefit American producers.

Table 10.—Discount Rates [1] of Federal Reserve Banks

Month	1920	1921	1922	1923	1924	1925	1926	1927
January	[2] 4¼–5½	[3] 5½–7	4½–5½	4–4½	4½	3 –4	3½–4	4
February	[2,4] 4¾–6	[3] 5½–7	4½–5	4–4½	4½	3 –4	4	4
March	[2,5] 4¾–6	[3] 5½–7	4½–5	4–4½	4½	3½–4	4	4
April	[2] 4¾–6	[3] 5½–7	4½–5	4½	4½	3½–4	4	4
May	5 –6	[3] 5½–7	4½–5	4½	4½	3½–4	3½–4	4
June	5 –7	[3] 5½–6½	4½–5	4½	4 –4½	3½–4	3½–4	4
July	5 –7	5½–6½	4 –5	4½	3½–4½	3½–4	3½–4	4
August	[3] 5½–7	5½–6½	4 –5	4½	3½–4½	3½–4	3½–4	[6] 3½–4
September	[3] 5½–7	5½–6½	4 –4½	4½	3 –4½	3½–4	4	[6] 3½–4
October	[3] 5½–7	5 –6½	4 –4½	4½	3 –4½	3½–4	4	3½
November	[3] 5½–7	5 –6	4 –4½	4½	3 –4	3½–4	4	3½
December	[3] 5½–7	4½–5½	4 –4½	4½	3 –4	3½–4	4	3½

[1] Rates are those in effect on the first of the month or the last day of the preceding month and cover all classes of paper except that the rate on 6 to 9 months agricultural and livestock paper in Boston and Philadelphia, June, 1923, to May, 1924, inclusive, was 5 per cent.

[2] Not including rate on War Finance Corporation bonds which was 1 per cent higher than rate on commercial paper.

[3] Except that the minimum rate on Treasury certificates of indebtedness was 5 per cent in some districts.

[4] Rate on Feb. 2.

[5] Rate on Feb. 28.

[6] Rates in effect Aug. 5 and Sept. 7, respectively.

Source: Federal Reserve Board.

Table 11.—Customary Money Rates in New York

NOTE.—Rates shown are those at which the bulk of the paper of each class is handled.

Month	Prime bankers' acceptances, 90 days [1]				Customers' prime commercial paper, 30 to 90 days [2]				Customers' loans secured by prime stock exchange collateral [2, 3]			
	1924	1925	1926	1927	1924	1925	1926	1927	1924	1925	1926	1927
January	4⅛	3	3½–3¾	3⅝–3¾	5–5½	4	4½–5	4½	5–5¾	4 –5	4½–5	4¾–5
February	4–4⅛	3½	3⅝	3⅝–3¾	5	4–5	4½–5	4½	5–5½	4½–5	4¾–5½	4½–5
March	4–4⅛	3¼	3⅝	3⅝	5	4–5	4½–5	4½	5–5½	4½–5	4⅞–5	4½–5
April	3⅞–4	3⅛	3⅛–3⅝	3⅝	4¾–5	4–5	4½–5	4½	5–5½	3¾–5¼	5–5½	4½–5
May	3–3½	3⅛–3¼	3⅛–3⅜	3⅝	4¾–5¼	4–4½	4¼–5	4½	5–5½	3¾–5	4½–5	4½–5
June	2¼–2⅝	3¼	3¼–3⅜	3⅝	4½–5	4–4½	4–4¾	4½	5–5½	3¾–5	4½–5¼	4½–5
July	[2]	3¼	3⅜	3⅜–3⅝	4–5	4–5	4¼	4½	3–4¾	4–5	4½–5	4½–5
August	2–2¼	3¼	3⅜–3¾	3½	4–4¼	4–4½	4¼–4¾	4¼–4½	4½	4½–5	4¾–5	4¼–5
September	2⅛–2¼	3½	3⅞	3½	3¾–5	4¼–5	4½–4¾	4¼–4½	3½–4¾	4½–5	5	4½–5
October	2¼	3½	3⅞	3¼	3½–5	4¼–5	4½–4¾	4¼–4½	4½–5	5	4¾–5½	4⅜–5
November	2¼–2½	3½	3¾–3⅞	3¼	3½–5	4¼–5	4½–4¾	4–4½	3¾–4¾	4½–5	5	4¼–5
December	2¾–3	3½	3¾–3⅞	3¼	4–4½	4½–5	4½–4¾	4¼–4½	4½–5	5	5	4½–5

[1] Calendar month.

[2] Rates are for the week ending the 15th of the month, except the rate for January, 1924, which is for 30 days ending the 15th of the month. Rates for prime commercial paper beginning June, 1926, are for both 30–90 days and 4–6 months' paper.

[3] Except Liberty bonds. Rates prior to 1927 are for time loans only. This affects only slightly the comparability of the figures as the difference between customers' rates on demand and time loans is small.

Source: Federal Reserve Board.

In 1927, as in 1926, all money rates (Table 11) were unusually stable. There was, however, a negligible softening of the rates during the last half year. The year's range on customers' collateral loans was between 4¼ and 5 per cent, probably the narrowest yearly range for all time. In the three preceding years the ranges in collateral rates were 3½ to 5¾, 3¾ to 5¼, and 4½ to 5½ per cent, respectively.

BANK CLEARINGS AND DEBITS TO INDIVIDUAL ACCOUNTS

Clearings.

Bank clearings for years ending September 30 since 1891 are shown in Table 12. Figures are for 182 identical cities, beginning with 1920, but prior to that year there was some variation in the number included. These clearings statistics are of chief interest as business indexes for the long period before statistics on debits to individual accounts were collected. The latter are more reliable and have now been collected for about nine years—long enough for most purposes of comparison.

Table 12.—Bank Clearings in the United States

[Amounts in millions of dollars. Commencing with 1920, figures are for 182 identical cities. In earlier years there was some variation in number of cities included. For wholesale price index, 1913=100]

Yearly average or year ended Sept. 30—	Total	New York City	Outside New York City	Wholesale price index [1]	Year ended Sept. 30—	Total	New York City	Outside New York City	Wholesale price index [1]
1891–1895	54,617	31,450	23,167	74.0	1922	379,433	213,326	166,107	148.8
1896–1900	69,090	41,975	27,115	71.7	1923	408,590	214,621	193,968	153.7
1901–1905	117,507	74,832	42,675	84.2	1924	434,766	235,499	199,268	149.7
1906–1910	153,252	94,902	58,350	94.0	1925	495,995	276,874	219,121	158.7
1911–1915	165,692	93,563	72,128	98.2	1926	525,317	293,443	231,874	151.0
1916–1920	343,373	194,056	149,316	186.2	1927	535,908	307,159	228,750	146.8
1921–1925	418,651	228,881	189,771	151.6	Per cent change from				
1913	173,193	98,122	75,071	100.0					
1919	387,854	214,703	173,151	206.4					
1920	460,722	252,338	208,384	226.2	1926	+2.0	+4.7	−1.3	−2.8
1921	374,471	204,082	170,389	146.9					

[1] Average for calendar year.

Source: Comptroller of the Currency, Treasury Department.

Debits to Individual Accounts.

Bank clearings have long been criticized as a business index because they do not include checks on the payee's bank and checks cashed at banks on which drawn, and because mergers and the progress of branch banking tend to vitiate comparisons over a period of years. Since 1918 statistics of debits to individual accounts have been compiled by the Federal Reserve Board. Since the beginning of 1925 these statistics have embraced about 260 cities and covered probably more than 90 per cent of the checks drawn in the country, but, in order to maintain comparability for all years, data for 141 cities are shown in Table 13.

The 1921, 1922, and 1923 (calendar years) total of debits to individual accounts of these 141 cities were each exactly 12.2 per cent

more than clearings of all cities as recorded by the Commercial and Financial Chronicle. In 1924 debits exceeded clearings by 7.9 per cent; in 1925, by 11.3 per cent; in 1926, by 16.1 per cent; and in 1927, by 21.4 per cent.

Table 13.—Debits to Individual Accounts in 141 Principal Cities

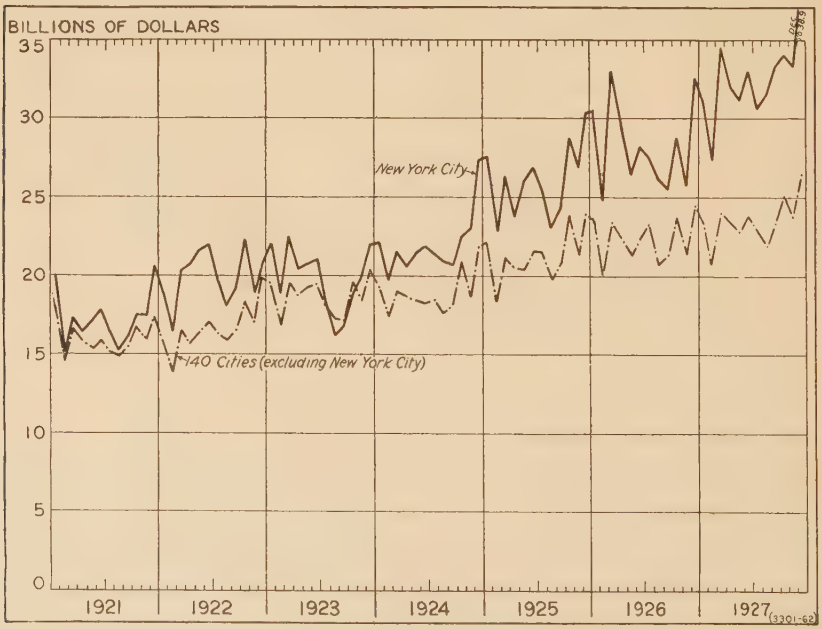
[In millions of dollars. For wholesale price index, 1913=100]

Calendar year	Total, 141 cities	New York City	All other cities	Wholesale price index	Calendar year	Total, 141 cities	New York City	All other cities	Wholesale price index
1919	455,294	244,119	211,175	206.4	1925	570,064	313,373	256,691	158.7
1920	483,026	241,431	241,596	226.2	1926	607,956	339,055	268,900	151.0
1921	399,036	207,096	191,941	146.9	1927	673,903	391,558	282,345	146.8
1922	439,364	239,855	199,509	148.8	Per cent change from 1926				
1923	463,726	238,396	225,330	153.7		+10.8	+15.5	+5.0	−2.8
1924	491,691	263,531	228,161	149.7					

Source: Federal Reserve Board.

Table 13 shows the sharp reduction in check payments during the depression year 1921, the recovery of business in 1922, the more gradual improvement in 1923 and 1924, the strong upward swing in 1925,

Chart II.—DEBITS TO INDIVIDUAL ACCOUNTS IN 141 LEADING CITIES



and the further progress into new prosperity levels in 1926 and 1927. Check payments in 1927 were 11 per cent greater than in 1926 and showed an expansion of 69 per cent over 1921. These statistics have been somewhat inflated by record-breaking check payments for stock-market speculation. The growth has been considerably affected, of course, by price changes.

Table 13 shows also that check payments in New York City increased during 1927 by 15.5 per cent; the increase in "All other cities" was 5 per cent over 1926 and 25 per cent over the already high figure of 1923. Table 14 shows the distribution of the increased business activity during 1927. All reserve districts, except Richmond and Atlanta, reported larger check payments in 1927 than in 1926.

Table 14.—Debits to Individual Accounts in 141 Cities by Federal Reserve Districts

[In millions of dollars]

Year	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco
1920	28,137	249,375	22,092	27,677	9,635	12,812	59,066	13,542	8,902	16,322	7,240	28,226
1921	21,736	213,911	18,690	21,105	8,235	9,383	46,837	10,401	6,788	12,207	5,807	23,937
1922	22,392	247,067	19,985	22,290	7,716	9,579	49,304	10,939	6,971	12,550	6,010	24,562
1923	24,851	246,493	22,301	26,140	8,501	11,137	55,367	12,794	7,495	13,494	6,217	28,936
1924	25,675	271,861	22,773	25,775	8,298	11,721	55,995	12,812	8,240	12,778	6,227	29,535
1925	29,014	322,843	25,253	28,726	9,193	13,913	63,574	14,385	9,039	14,193	7,197	32,731
1926	31,033	348,833	26,248	30,022	9,336	14,264	67,217	14,741	8,301	14,824	7,474	35,663
1927	33,566	401,819	27,291	32,180	9,231	13,790	70,195	14,750	8,699	15,131	7,782	39,470

Source: Federal Reserve Board.

The figures by months in Table 15 show the summer dullness in business during each of the six years except 1922. It is probable that a large proportion of the $12,600,000,000 rise in check payments at New York in the second half of 1927 as compared with the first half was caused by stock-market operations.

Table 15.—Debits to Individual Accounts in 141 Cities

[In billions and tenths of billions of dollars]

Month	140 cities, not including New York						New York City					
	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
January	15.9	19.7	19.4	22.3	23.6	23.5	19.1	22.1	22.1	27.7	30.5	31.3
February	14.0	16.9	17.5	18.6	20.1	20.8	16.5	19.0	19.9	22.9	24.8	27.4
March	16.5	19.6	19.2	21.2	23.5	24.0	20.4	22.5	21.5	26.4	33.0	34.5
April	15.7	18.8	18.9	20.6	22.5	23.6	20.7	20.5	20.7	23.9	29.3	32.0
May	16.3	19.4	18.6	20.4	21.4	22.9	21.7	20.7	21.4	26.2	26.6	31.3
June	17.2	19.5	18.3	21.7	22.5	23.8	22.1	21.0	21.9	26.9	28.2	33.0
July	16.3	18.2	18.7	21.6	23.3	22.9	19.7	18.3	21.5	25.5	27.7	30.7
August	15.8	17.3	17.8	19.8	20.8	22.1	18.3	16.2	20.9	23.3	26.2	31.7
September	16.6	17.3	18.2	20.9	21.3	23.4	19.2	16.8	20.7	24.4	25.6	33.4
October	18.4	19.8	20.9	24.0	23.8	25.1	22.3	19.2	22.5	28.9	28.8	34.1
November	17.1	18.5	18.8	21.4	21.6	23.8	19.0	20.0	23.0	27.0	25.8	33.3
December	19.6	20.4	21.8	24.1	24.5	26.5	20.9	22.1	27.3	30.3	32.6	38.9

Source: Federal Reserve Board.

LIFE INSURANCE

After the depression of 1920–21, the amount of new life insurance written established a new high record in each year until 1927. Table 16, which contains data from 45 life-insurance companies supposed to transact about four-fifths of the total business, shows that new policies written by them during 1927 totaled $11,296,000,000, or about 1 per cent less than in 1926, the decrease being wholly in group insurance.

Table 16.—New Business and Premiums of Principal Life-Insurance Companies

[Number of policies in thousands, amounts in millions of dollars. Data cover the business of 45 companies which had in force 81 per cent of the total legal reserve life insurance outstanding in the United States Dec. 31, 1923]

Item	1925	1926	1927	1926				1927			
				Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.
New business written and paid for: [1]											
Total amount of policies	10,757	11,421	11,296	2,726	2,942	2,576	3,177	2,821	2,998	2,533	2,944
Ordinary—											
Number of policies	2,570	2,637	2,643	617	700	605	714	638	717	615	673
Amount	7,399	7,804	7,804	1,882	2,082	1,778	2,061	1,943	2,147	1,791	1,924
Industrial—											
Number of policies	9,653	9,387	9,884	2,316	2,390	2,149	2,532	2,337	2,571	2,260	2,717
Amount	2,359	2,566	2,667	632	653	591	690	634	691	613	730
Group—											
Number of certificates	546	752	501	137	144	142	329	149	103	73	176
Amount	999	1,051	824	212	206	207	425	244	160	130	291
Premium income, total [2]	2,026	2,167	2,408	531	539	509	588	583	600	567	658
Ordinary	1,501	1,571	1,740	390	403	370	408	431	446	410	454
Industrial	469	537	602	122	125	127	163	135	138	142	187
Group	56	59	65	18	12	12	17	18	16	15	17

[1] Does not include revivals, increases, and dividend additions.
[2] Includes total premiums collected, new and renewal.

Source: Survey of Current Business, compiled by the Association of Life Insurance Presidents.

Table 17.—Finances and Business of All Life-Insurance Companies

[Number of policies in thousands, amounts in millions of dollars]

Item	1911–1915, average	1921–1925, average	1922	1923	1924	1925	1926
Total amount of policies, all classes:							
Written during year [1]	3,234	11,848	9,774	12,070	13,195	15,473	16,337
In force, end of period or year [2]	22,784	71,642	50,291	56,804	63,780	71,642	78,492
Increase during year	1,276	5,872	4,307	6,513	6,976	7,862	6,850
Ordinary: [3]							
Number of policies—							
Written during year [1]	1,344	3,362	2,905	3,560	3,643	3,900	4,009
In force end of period or year [2]	9,890	23,894	18,814	20,534	22,121	23,894	25,501
Increase during year	585	1,440	1,129	1,720	1,587	1,773	1,607
Amount of policies—							
Written during year [1]	2,373	9,143	7,506	9,455	10,152	11,817	12,383
In force, end of period or year [2]	18,349	58,818	41,404	46,696	52,436	58,818	64,457
Increase during year	1,024	4,745	3,427	5,292	5,740	6,382	5,639
Industrial:							
Number of policies—							
Written during year [1]	6,201	13,412	12,245	13,088	14,325	16,425	15,804
In force, end of period or year [2]	33,142	73,736	58,283	63,461	68,248	73,736	76,404
Increase during year	2,022	4,786	4,186	5,178	4,787	5,488	2,668
Amount of policies—							
Written during year [1]	860	2,705	2,268	2,615	3,043	3,656	3,954
In force, end of period or year [2]	4,435	12,824	8,887	10,107	11,344	12,824	14,035
Increase during year	252	1,127	880	1,221	1,237	1,480	1,211
Income and expenditures, all classes:							
Premium income	710	1,926	1,686	1,900	2,122	2,384	2,624
Interest and other income	231	524	463	528	580	634	706
Payments to policyholders	477	1,077	1,006	1,088	1,205	1,246	1,373
Other expenditures	191	563	488	578	608	690	751

[1] New business written and paid for.
[2] Figures in first 2 columns represent number or amount in force at the end of 1915 and 1925, respectively.
[3] Includes group.

Source: The Insurance Yearbook of the Spectator Co., New York, N. Y.

The growth and magnitude of American life-insurance business to the end of 1926 is shown in Table 17; complete figures for 1927 are unavailable. The amount of American life insurance in force has about doubled since 1920 and tripled since 1917, and the new policies sold in each of the last two years exceeded the total life insurance in force in 1910.

At the end of 1926 more than 25,500,000 ordinary life-insurance policies and more than 76,000,000 industrial policies were in force in the United States. This excludes an important volume of insurance by fraternal orders. The total assets of all legal-reserve life-insurance companies at the end of 1926 were estimated at $12,500,000,000. The total life-insurance premiums paid by American policyholders each year exceed the annual outlay for the armies and navies of the five greatest military powers.

SAVINGS

Various attempts have been made to investigate the annual volume of savings in the United States, but it is impossible to obtain accurate results from such investigations. The principal difficulty is the numerous and extensive duplications; for example, increased savings deposits may be invested by the savings banks in new capital issues. Table 18 shows the trend of various types of savings since 1913, but it does not pretend to measure the total volume of savings. Some of the important savings items not shown in the table are other kinds of insurance, certain time deposits in commercial banks, reductions of indebtedness from current income, and noncorporate payments for capital goods from current income. Statistics on several of these elements of the problem can not be obtained.

Table 18.—Certain Major Items of American Savings

[In millions of dollars]

NOTE.—Increase in savings deposits is for fiscal years ended June 30; increase in assets of building and loan associations includes figures for calendar years for some States and fiscal years ending various dates for others; other data are for calendar years.

Year	Increase in savings deposits, all banks [1]	Increase in assets of building and loan associations	Premiums paid to life-insurance companies less operating expenses			Additions to surpluses of corporations [2]	New capital issues
			Total	Ordinary life [3]	Industrial life		
1913	144	111	524	374	150	----------	----------
1918	659	129	706	502	203	----------	----------
1919	1,506	228	840	566	274	----------	3,588
1920	2,274	408	931	613	318	----------	3,635
1921	1,187	356	1,088	719	369	----------	3,577
1922	1,078	452	1,198	779	419	1,747	4,304
1923	2,148	600	1,322	833	489	2,528	4,304
1924	1,462	823	1,514	947	567	1,575	5,593
1925	1,945	743	1,694	1,046	647	2,957	6,220
1926	1,562	[4] 825	1,873	1,145	729	----------	6,344
1927	1,395	----------	----------	----------	----------	----------	7,735

[1] Includes postal savings funds deposited in banks.
[2] Net profits less cash dividends and income and profits tax as shown on income tax returns.
[3] Includes "Group."
[4] Total assets at end of 1926 were $6,334,000,000.

Sources: Savings deposits, American Bankers' Association; building and loan associations, United States League of Building and Loan Associations; life insurance, The Insurance Yearbook of The Spectator Co., New York, N. Y.; additions to surpluses of corporations, Treasury Department; new capital issues, Commercial and Financial Chronicle.

STOCK AND CIRCULATION OF MONEY

Several refinements in the statistics on stocks and circulation of money since the last Yearbook was compiled have made these important statistics more dependable. There have been, however, no really important fluctuations for several years in the amount of money in circulation.

Table 19.—Stock and Circulation of Money, 1900 to 1927

NOTE.—Figures have been revised to include minor coins. They have also been revised, beginning 1915, to include in stock of money gold bullion and foreign gold coin held by the Federal reserve banks and agents and gold coin and bullion held abroad for the account of the Federal reserve banks, and to exclude earmarked gold coin from the stock of money and, hence, from money in circulation. Subsequent to September, 1923, paper currency in circulation in foreign countries and the amount held by Cuban agencies of the Federal reserve banks have been included in stock and circulation figures.

[In millions of dollars, except circulation per capita]

June 30—	Stock [1]					In circulation					Circulation per capita
	Total	Gold [2]	Silver [3]	Minor coins	Paper	Total	Gold [4]	Silver [4]	Minor coins	Paper [4]	
1900	2,366	1,034	649	27	656	2,081	812	551	26	693	$27.28
1905	2,919	1,358	683	36	842	2,623	1,136	630	35	822	31.51
1910	3,467	1,636	723	47	1,060	3,149	1,394	687	46	1,022	34.84
1913	3,777	1,871	743	57	1,106	3,419	1,612	696	55	1,056	35.12
1914	3,798	1,891	750	60	1,097	3,459	1,638	709	57	1,055	34.93
1915	4,051	1,986	754	61	1,250	3,320	1,409	687	59	1,165	32.96
1916	4,542	2,445	757	64	1,276	3,649	1,675	714	63	1,197	35.63
1917	5,677	3,218	767	70	1,622	4,064	1,747	734	68	1,514	39.02
1918	6,906	3,163	731	78	2,934	4,482	1,049	665	75	2,694	42.33
1919	7,688	3,113	551	83	3,941	4,877	803	472	82	3,519	45.95
1920	8,158	2,865	528	92	4,673	5,468	735	424	91	4,218	51.38
1921	8,175	3,275	560	99	4,241	4,911	649	461	91	3,710	45.44
1922	8,276	3,785	652	99	3,740	4,463	589	553	89	3,232	40.67
1923	8,703	4,050	761	99	3,793	4,823	791	669	94	3,270	43.35
1924	8,847	4,488	781	102	3,474	4,849	1,195	671	97	2,886	43.03
1925	8,304	4,365	806	104	3,029	4,815	1,407	699	100	2,609	42.20
1926	8,429	4,447	822	109	3,050	4,885	1,449	699	104	2,633	42.29
1927	8,667	4,587	834	113	3,133	4,851	1,392	700	108	2,651	41.48

[1] Does not include gold and silver certificates and Treasury notes of 1890, since they are backed dollar for dollar by gold or silver.
[2] Does not include gold bullion or foreign coin outside the vaults of the Treasury, Federal reserve banks, and Federal reserve agents.
[3] Not including silver bullion the value of which was $6,921,159 on June 30, 1927.
[4] Gold and silver certificates included in gold and silver, respectively; paper includes Treasury notes of 1890.

Source: Treasury Department.

Table 20.—Stock and Circulation of Money, by Kinds [1]

[In millions of dollars]

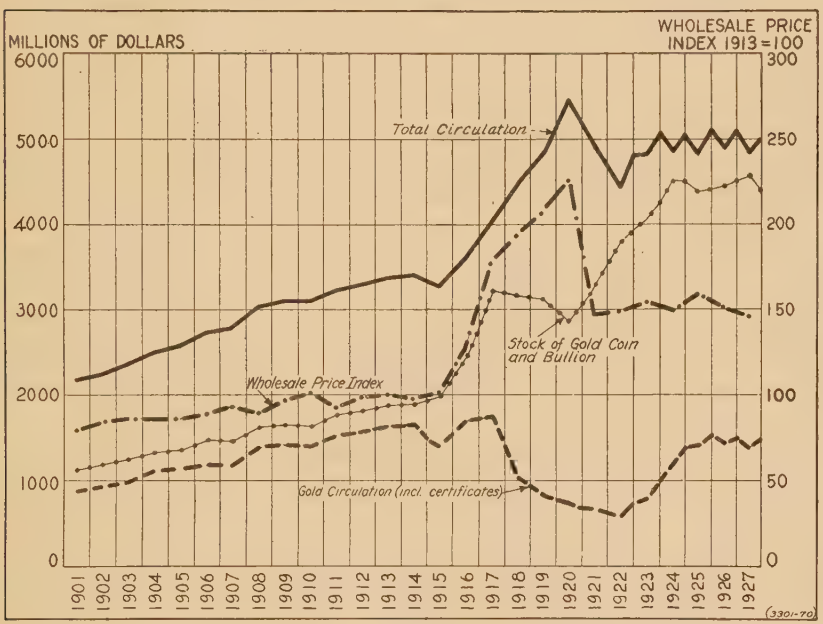
Dec. 31—	Total	Gold coin and bullion	Standard silver dollars	Subsidiary silver	Minor coins	Federal reserve notes	Federal reserve bank notes	National-bank notes	United States notes	Treasury notes of 1890
Stock: [2]										
1923	9,075	[3] 4,244	498	277	101	[3] 2,822	14	772	347	----
1924	8,769	[3] 4,499	512	283	103	[3] 2,245	9	772	347	----
1925	8,582	[3] 4,399	524	289	107	[3] 2,206	6	705	347	----
1926	8,744	[3] 4,492	535	296	111	[3] 2,261	5	698	347	----
1927	8,619	[3] 4,379	538	301	115	[3] 2,234	4	701	347	----
Circulation:										
1923	5,044	[4] 994	[4] 433	261	98	2,224	14	714	306	1
1924	5,047	[4] 1,380	[4] 447	266	100	1,842	8	706	297	1
1925	5,104	[4] 1,527	[4] 445	275	105	1,816	6	635	295	1
1926	5,095	[4] 1,501	[4] 448	281	108	1,824	5	629	297	1
1927	5,003	[4] 1,476	[4] 449	286	112	1,763	4	619	293	1

[1] See headnote, Table 19.
[2] See footnotes 1 and 2, Table 19, which apply to corresponding items.
[3] Includes own Federal reserve notes held by Federal reserve banks.
[4] Includes certificates.

Source: Treasury Department.

The stock of money during the fiscal year 1927 increased by $238,000,000. About three-fifths of this gain, coming from net gold imports, was lost again during the heavy gold outflow in the second half of the calendar year. (Table 20.) Per capita circulation of money declined by 1.9 per cent during the fiscal year 1926–27,

Chart III.—MONEY IN CIRCULATION AND STOCK OF GOLD



but the decline in wholesale prices during that period was about three times as great.

GOLD MOVEMENT

Visible Gold Exports and Imports.

Except in 1919 and 1925, we have had an excess of gold imports every year since 1914. Our net import of gold from 1915 to 1927, inclusive, was $2,383,000,000. During that period our gold stock was increased also by the excess in our production of gold over our use of it in the arts, and our gold stock was further affected by the invisible export and import through "earmarking."

Net imports of gold in 1927 (Table 21) were only $6,080,000. During the first eight months of the year, however, the net imports amounted to $146,789,000, while during the last four months the net exports totaled $140,709,000. It is believed that in many of the transactions during the latter part of the year, gold figured more as a commodity, desired in itself, than as a medium for the settlement of

international balances. Thus, the $33,000,000 taken by Brazil in November, the $10,000,000 taken by France in December, and the $5,000,000 exported to Poland in December were desired to increase the locally held reserves of gold in connection with currency reconstruction. A large part of these gold exports, if not made on a "straight-exchange basis," was at least facilitated by the rising premiums on certain foreign currencies.

Table 21.—Gold Exports and Imports

[In millions of dollars]

Yearly average or year (calendar year)	Exports	Imports	Net exports (+) or imports (−)	Yearly average or year ended June 30—	Exports	Imports	Net exports (+) or imports (−)
1901–1905	61	60	+1	1901–1905	65	63	+1
1906–1910	75	91	−16	1906–1910	74	89	−15
1911	37	57	−20	1911	23	74	−51
1912	47	67	−19	1912	57	49	+8
1913	92	64	+28	1913	78	69	+9
1914	223	57	+165	1914	112	67	+46
1915	31	452	−421	1915	146	172	−25
1916	156	686	−530	1916	90	494	−404
1917	372	552	−180	1917	292	977	−685
1918	41	62	−21	1918	191	124	+66
1919	368	77	+292	1919	117	62	+54
1920	322	417	−95	1920	466	151	+316
1921	24	691	−667	1921	134	639	−505
1922	37	275	−238	1922	27	468	−441
1923	29	323	−294	1923	49	284	−235
1924	62	320	−258	1924	10	417	−407
1925	263	128	+134	1925	249	134	+115
1926	116	214	−98	1926	113	211	−97
1927	201	208	−6	1927	104	252	−148

Source: Bureau of Foreign and Domestic Commerce.

Table 22.—Increase or Decrease in American Gold Stock Through Changes in Gold Under Earmark for Foreign Account, 1921 to 1927

[In thousands of dollars]

Month	1921	1922	1923	1924	1925	1926	1927
Total	**+22,000**	**−3,700**	**+700**	**−42,213**	**+32,244**	**−26,297**	**−160,153**
January	+3,990		−1,629		−810	−6,043	+19,487
February	−1,990		+4,329	+593	−1,366	−11,000	+3,180
March				−2,452	−6,825	−22,988	−1,502
April			+1,000	−558	+14,850		−1,000
May				+1,000	+12,725		−95,000
June	−3,000			+2,000	+5,075	−580	−500
July	+5,000		−1,500	−2,583	−3,901	+4,000	+184
August				−7,984	+8,725	+19,200	−2,501
September	+10,000		+500	−13,229	+901	−2,400	−9,000
October	+8,000	−1,500	−2,000	−17,000	+2,870	+4	−25,001
November		−200		−500	+2,000	−7,498	−40,000
December		−2,000		−1,500	−2,000	+1,008	−8,500

Source: Federal Reserve Board.

Invisible Exports and Imports of Gold.

The earmarking of gold is a type of transaction associated with post-war currency reconstruction. It was not much resorted to until several years after the armistice—when the foreign powers seriously began the task of returning to the gold standard; and, indeed, until 1927, when there was a record-breaking volume of these transactions, little was publicly known of how earmarking arises or of the sums involved. The Federal Reserve Board recently issued very complete statistics on the subject, shown in Table 22. During 1927 the sums of additional gold in American banks earmarked for foreign account exceeded the sums removed from earmark here plus additional gold in foreign banks earmarked for American account by $160,153,000. This invisible net export of gold exceeded the visible net import of gold by about $154,000,000.

Since the war the gold-reserve requirements of various foreign central banks have been changed to permit them to count gold holdings abroad as gold in vault. Where this is the case the bank can increase its gold reserve without incurring the shipping expenses of actually importing the metal. The bank merely converts some of its foreign-exchange holdings into foreign gold holdings. The gold is bought abroad and there "earmarked"; it is segregated and becomes directly and specifically the property of the central bank.

Earmarking may be used also to influence the bank rate in a foreign country or to curb exchange speculation there. If the banks of a gold-standard nation are making loans for speculation in the currency of a paper-standard country the central bank of the latter country can curb such speculation by converting into gold all its deposits and short-term investments in the gold-standard country; a little gold pyramids into a large amount of bank loans. Such a transaction, on a large scale, would raise the bank rate of the gold-standard country, and it might be used for that purpose. Or, the transaction might be reversed to lower the bank rate in the gold-standard country. Again, if a foreign central bank wants gold for its vaults it may keep foreign gold under earmark for a short period before shipping it.

During recent years Federal reserve authorities have actively encouraged the earmarking of foreign-owned gold in the United States in order to keep additional gold out of our credit system. Likewise, when the Federal reserve banks have come into possession of gold abroad they have been under an incentive to earmark it there in order not only to save the expense of shipping it to the United States but also to avoid an increase in our enormous stock of free gold.

FOREIGN EXCHANGE

An outstanding event in 1927 was the general rise of foreign exchange. On December 31, 1926, of the 25 European and Latin-American currencies quoted daily by the Federal Reserve Board only 5 were above mint par; and the average premium for these 5 was only 0.212 per cent. One year later, 13 of these 25 currencies were above mint par, and their average premium was 0.368 per cent. Of these 25 exchanges, 7 showed fractional declines, but no important decline is seen in these year-end comparisons, unless that of the Portuguese escudo from $0.0511 to $0.0495 be so considered.

The high quotation for sterling, $4.8844, was reached on December 12, and it is possible that some of the $8,548,000 of gold taken by the United Kingdom in December moved on a purely exchange basis. On December 10 the Argentine peso was quoted at 0.83 per cent above par, its high for the year. Argentina took about $61,440,000 of our gold exports during the last four months of 1927.

There was extremely important progress toward the reestablishment of the gold standard throughout the world. During the year the following countries went formally upon a gold basis: Denmark, India, Ecuador, Argentina, Poland, Italy, and Estonia.

Because of the banking crisis in Japan in the spring, the yen closed the year at 4½ per cent below the opening figure. Bar silver quotations, so closely related to the Chinese exchanges, rose from 54 to 57½ cents per ounce.

SECURITY MARKETS

Whereas 1926 was a year of marked irregularity in security values, 1927 resembled 1925 in that it was a "bull" year almost from beginning to end. Indeed, 1927 saw what was perhaps the strongest upswing in security values of any 12 months in our history. There was scarcely a halt in the rapid advance. The year end found the average value of industrial stocks nearly double their low of 1926 and about four times their low of 1921. This rise in security values is the more remarkable in view of the slight slackening in business activity and the decrease in profits of both railroads and industrial corporations.

One of the important events of the year was the decision of the stock exchange to list foreign stocks. Foreign bonds already listed on the exchange aggregated some $5,000,000,000.

Low interest rates, which contributed also to the steep rise in stocks, naturally raised the price of bonds. The Dow Jones Index of the price of 40 bonds (Table 23) shows an increase of nearly 5 per cent, which was slightly less than in 1926. Nearly all of last year's rise in bond values occurred during the last five months, a period of slight softening in money rates. The year closed with bonds at the highest level in American history.

Table 23.—Average Monthly Price Movements of Stocks and Bonds on the New York Stock Exchange

[See footnotes, Table 24]

Month	1922	1923	1924	1925	1926	1927	1922	1923	1924	1925	1926	1927
	25 industrial stocks (dollars per share)						25 railroad stocks (dollars per share)					
January	82.99	110.35	112.14	135.38	179.90	175.39	54.21	61.71	60.35	79.97	92.40	101.55
February	86.47	115.03	111.83	138.48	179.58	181.06	56.57	65.28	60.47	80.90	90.83	105.66
March	89.20	116.03	109.82	136.96	158.05	188.70	57.98	65.06	61.09	79.07	87.35	106.58
April	94.59	113.46	106.71	135.40	144.70	199.99	61.62	63.04	62.09	76.28	86.33	110.74
May	96.84	108.18	106.43	142.34	146.95	209.83	62.92	60.73	62.53	79.50	88.04	113.60
June	96.69	105.94	108.93	144.42	155.81	211.25	61.49	60.95	65.07	79.57	92.37	115.63
July	99.06	102.52	113.53	149.25	163.01	221.90	63.72	58.07	68.39	80.23	93.77	117.00
August	103.68	102.95	119.18	158.16	172.22	229.99	67.64	56.24	71.06	83.63	96.14	117.42
September	107.02	102.74	116.73	162.83	172.26	242.66	68.70	57.14	70.28	84.73	99.43	119.95
October	111.25	101.78	117.29	173.56	164.63	233.36	68.53	57.06	69.63	84.92	94.93	117.84
November	106.09	105.44	124.11	177.26	171.95	237.84	63.46	58.30	76.00	88.56	97.43	120.04
December	109.08	108.88	134.29	177.74	179.36	242.50	61.71	58.25	79.15	92.45	100.25	119.68
	Price index, 40 bonds (per cent of par)						Bond yields, municipal bonds (per cent)					
January	70.22	73.76	72.23	76.07	78.59	82.52	4.41	4.14	4.32	4.16	4.17	4.08
February	70.71	73.42	72.15	76.82	79.69	82.23	4.39	4.11	4.36	4.11	4.15	4.08
March	71.85	71.65	72.35	76.38	79.32	82.66	4.35	4.13	4.34	4.10	4.14	3.98
April	73.69	71.29	72.67	76.51	80.16	83.19	4.15	4.18	4.30	4.07	4.12	3.95
May	74.72	71.71	73.17	77.97	80.68	83.37	4.18	4.22	4.26	3.99	4.12	3.95
June	74.28	71.80	74.59	78.46	80.82	82.69	4.18	4.24	4.15	4.00	4.10	4.01
July	75.44	71.40	75.81	77.56	80.56	82.81	4.19	4.29	4.14	4.07	4.11	4.06
August	76.80	71.86	75.93	76.34	80.48	83.98	4.15	4.35	4.12	4.15	4.11	4.02
September	77.47	71.22	75.40	76.92	80.42	84.35	4.09	4.40	4.11	4.21	4.12	3.96
October	75.96	70.56	75.74	76.73	80.31	85.05	4.14	4.39	4.11	4.26	4.16	3.95
November	74.10	70.96	76.06	77.12	81.36	85.43	4.18	4.37	4.13	4.22	4.14	3.93
December	74.11	71.04	75.77	77.56	81.95	85.98	4.16	4.37	4.16	4.23	4.13	3.87

Sources: Stock prices, The Annalist; bond price index, Dow, Jones & Co.; bond yields, The Bond Buyer.

Chart IV.—AVERAGE PRICES OF STOCK ON THE NEW YORK STOCK EXCHANGE

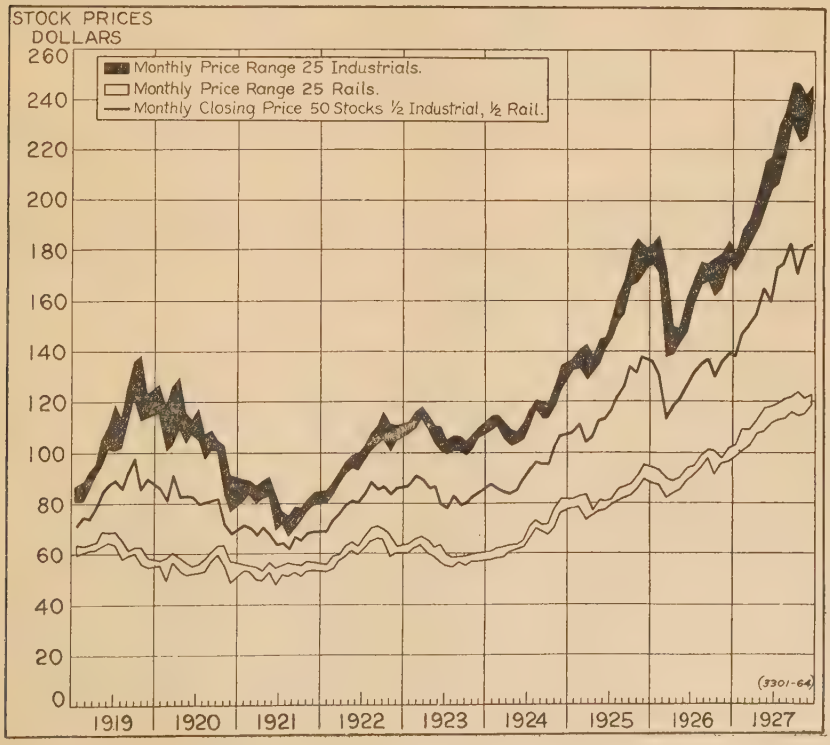


Table 24.—Annual Average Price Movements of Stocks and Bonds on the New York Stock Exchange

Year	Stocks (dollars per share) [1]		Price index, 40 bonds (per cent of par) [2]	Bond yields, municipal bonds (per cent) [3]	Year	Stocks (dollars per share)		Price index, 40 bonds (per cent of par)	Bond yields, municipal bonds (per cent)
	25 industrials	25 railroads				25 industrials	25 railroads		
1913	58.19	82.97		4.45	1921	79.38	53.21	60.15	5.02
1914	58.08	77.57		4.16	1922	98.58	62.38	74.11	4.21
1915	75.35	73.16	76.76	4.23	1923	107.78	60.15	71.72	4.27
1916	99.14	80.05	80.49	4.06	1924	115.08	67.18	74.32	4.21
1917	85.44	69.12	75.58	4.31	1925	152.65	82.48	77.04	4.13
1918	80.98	61.34	69.84	4.58	1926	165.70	93.27	80.36	4.13
1919	105.77	62.06	69.07	4.50	1927	214.54	113.81	83.69	3.99
1920	107.21	55.94	59.70	5.04					

[1] Averages of daily closing prices for these stocks.
[2] Combined from the yields of the average prices of the selected railroad, public utility, and industrial bonds for each day of the month, the average yield being capitalized at 4 per cent to give the combined index.
[3] Average market yield of bonds of 20 large cities at the end of each month since Jan. 31, 1917; previous figures are for the first of the month.
Sources: Stock prices, The Annalist; bond price index, Dow, Jones & Co.; bond yields, The Bond Buyer.

Table 25 shows that during 1927 stock transfers numbered 516,000,000 shares—or 13.7 per cent more than in the record year 1925. Similarly a new record of activity in "State, municipal, and foreign bonds" was established, primarily as a result of increased listings. Dealings in United States Government bonds were slightly heavier in 1927 than in 1926, but the table shows the strong tendency of such dealings to diminish with the enormous retirements of Government bonds and with the gradual accumulation by long-term investors.

Table 25.—New York Stock Exchange Transactions

Item	1920	1921	1922	1923	1924	1925	1926	1927
Stocks (millions of shares)	227	173	259	236	282	454	451	516
Bonds (millions of dollars):								
Railway and miscellaneous	827	1,043	1,905	1,568	2,345	2,332	2,004	2,142
United States Government	2,861	1,957	1,873	796	877	391	262	290
State, municipal, and foreign	289	324	592	425	582	661	721	837

Source: Commercial and Financial Chronicle.

Brokers' Loans.

Loans by brokers in the New York Stock Exchange rose during every month of 1927 (Table 26) and in July passed the record high of 1926, which occurred just before the severe break in stock prices in the middle of February, 1926. The total increase during 1927 was $1,140,000,000. Reverting to Table 7 it will be noted that the increase during 1927 of total loans and discounts by all member banks of the Federal reserve system was only $1,411,000,000. This gives an impression of the extent to which the year's increase in bank credit was used by the New York stock market. On June 30, 1927, the loans and discounts of these member banks were about 62 per cent of the country's total.

Table 26.—Brokers' Loans Outstanding Each Month, 1926 and 1927

NOTE.—In millions of dollars. Figures cover net loans obtained by New York Stock Exchange members on collateral contracted for and carried in New York.

Date	Total	Demand loans	Time loans	Date	Total	Demand loans	Time loans
1926				1927			
Jan. 30	3,513	2,517	996	Jan. 31	3,139	2,328	810
Feb. 27	3,536	2,495	1,041	Feb. 28	3,256	2,475	781
Mar. 31	3,000	2,033	967	Mar. 31	3,290	2,505	785
Apr. 30	2,836	1,970	866	Apr. 30	3,341	2,541	800
May 28	2,767	1,987	780	May 31	3,458	2,674	784
June 30	2,926	2,225	701	June 30	3,569	2,757	812
July 31	2,998	2,283	715	July 30	3,642	2,765	877
Aug. 31	3,142	2,364	778	Aug. 31	3,674	2,746	928
Sept. 30	3,219	2,419	800	Sept. 30	3,915	3,108	897
Oct. 31	3,111	2,289	822	Oct. 31	3,946	3,023	923
Nov. 30	3,129	2,330	800	Nov. 30	4,092	3,134	958
Dec. 31	3,293	2,542	751	Dec. 31	4,433	3,481	952

Source: Commercial and Financial Chronicle.

Capital Issues.

Capital issues totaled $9,871,000,000, or about one-third more than in the record year 1926. The volume has increased in every year covered by Table 27, except 1923, but never before by such a large percentage. The total brought out in 1927 was, however, much less than the flotations of Liberty bonds during the war years. The ratio of domestic stocks to domestic bonds in the new capital issues in 1927 was almost exactly the same as in 1926.

Table 27.—Capital Flotations in the United States

[Amounts in millions of dollars. Figures include both new capital and refunding]

Year and quarter	All issues	Domestic			Foreign government and other foreign	Percentage of domestic corporate issues in form of—		
		Corporate	State, county, and municipal [1]	Farm-loan banks		Stocks	Bonds and notes maturing—	
							Within 5 years	After 5 years
1920	4,010	2,788	699	----	522	37	22	40
1921	4,204	2,270	1,236	122	577	12	9	78
1922	5,236	2,949	1,144	386	756	21	5	74
1923	4,990	3,179	1,071	393	347	23	6	71
1924	6,352	3,521	1,408	179	1,245	25	10	66
1925	7,126	4,222	1,408	188	1,307	30	7	63
1926	7,430	4,574	1,375	131	1,350	27	6	67
January–March	1,993	1,359	339	39	257	34	7	59
April–June	2,060	1,206	418	76	360	22	8	70
July–September	1,477	826	297	12	342	21	6	73
October–December	1,900	1,183	321	5	391	27	5	68
1927	9,871	6,495	1,477	180	1,719	27	5	69
January–March	2,513	1,777	335	32	368	28	3	69
April–June	2,782	1,745	508	110	419	22	5	73
July–September	1,725	1,087	291	5	342	32	6	62
October–December	2,851	1,886	343	32	590	27	5	68

[1] Includes United States possessions.

Source: Commercial and Financial Chronicle.

Foreign capital issues publicly offered in the United States, as compiled by the Department of Commerce, were 21 per cent greater than in 1926, the previous record year. The 265 different issues were distributed among 33 countries; 103 of them were issued by Canada. Germany, next to Canada, was the heaviest single borrower. Foreigners bought back blocks of many previous foreign issues, and there were important sinking-fund and redemption payments. This "backwash" reduced the net increase in our foreign investments to about $1,000,000,000.

UNITED STATES GOVERNMENT FINANCE

The fiscal year 1926–27 had the largest surplus and, except for 1920, the largest debt retirement of any fiscal year in the history of American public finance. It is important to observe, however, that the surplus was produced in large part by collections of taxes in arrears, sales of securities, and other nonrecurrent items. We have now had eight successive annual surpluses.

Table 28.—Ordinary Receipts and Expenditures of United States Government (Cash Basis as per Daily Treasury Statements, Unrevised)

[In millions of dollars. Data are for years ended June 30]

Item	1920	1921	1922	1923	1924	1925	1926	1927
Ordinary receipts	6,695	5,625	4,109	4,007	4,012	3,780	3,963	4,129
Surplus over expenditures chargeable against ordinary receipts	212	87	314	310	505	251	378	636
Expenditures chargeable against ordinary receipts	6,482	5,538	3,795	3,697	3,507	3,530	3,585	3,494
General expenditures	3,175	2,863	2,136	1,950	1,828	1,837	1,827	1,858
War and Navy Departments	2,347	1,752	932	726	681	708	668	680
Veterans' Bureau and pensions [1]	310	597	662	726	637	603	612	622
All other departments, independent offices, etc	518	514	542	498	510	526	547	556
Special expenditures	3,228	2,253	1,236	1,344	1,220	1,226	1,271	1,116
Interest on public debt	1,020	999	991	1,056	941	882	832	787
Refunds of customs and internal revenue	47	58	83	154	148	171	210	138
Postal deficiency		130	64	32	13	23	40	27
Operations in special accounts	1,689	930	61	50	55	[2] 1	10	[2] 8
Adjusted service certificate fund						99	120	115
All other special expenditures	472	136	38	52	64	52	60	56
Public debt retirement chargeable against ordinary receipts	79	422	423	403	458	467	487	520

[1] Figures for pensions and also, prior to 1923, for Veterans' Bureau are on the warrant basis.
[2] Excess of credits, deduct.

Source: Treasury Department.

Receipts and Expenditures.

During 1926–27 ordinary receipts of the United States Government increased (Table 28) by $166,000,000, expenditures chargeable against ordinary receipts diminished by about $92,000,000, and the surplus increased by $258,000,000.

The foregoing figures are taken from the daily Treasury statements (unrevised). The figures in Table 29, which summarizes American

Budgets for a longer period, are based on "warrants issued (net)." Expenditures, particularly on the "warrant basis," may differ widely from those on the "cash basis," because the former include unexpended balances to the credit of disbursing officers at the end of the year and do not include expenditures under unexpended balances at the beginning of the year, and because of other adjustments. The most important difference between expenditures given in this table and those given in the preceding table was in 1924–25, when there was deducted from the warrant expenditures a refund of $499,000,000 on account of retirement of the capital stock of the War Finance Corporation.

Table 29.—Ordinary Receipts and Expenditures Chargeable Against Them

[In millions of dollars. Figures are on the basis of warrants issued (net)]

Yearly average or year ended June 30	Ordinary receipts					Expenditures chargeable against ordinary receipts				Surplus (+) or deficit (−)
	Total	Customs	Income and profits tax	Miscellaneous internal revenue	All other	Total	Interest on the public debt	Public debt retirements	All other	
1891–1895	353	177	[1]	150	26	364	29	----	334	−11
1896–1900	435	185	----	207	43	457	38	----	419	−23
1901–1905	559	260	----	255	44	536	28	----	508	+24
1906–1910	629	311	[2]21	257	57	639	23	----	617	−11
1911–1915	710	289	50	307	64	720	23	----	698	−10
1916–1920	3,489	226	1,976	875	412	8,343	377	----	7,966	−4,854
1921–1925	4,205	464	2,122	1,038	581	3,698	972	434	2,292	+507
1917	1,124	226	360	450	89	2,086	25	----	2,061	−962
1918	4,180	183	2,839	857	302	13,792	198	----	13,594	−9,611
1919	4,654	183	2,601	1,239	631	18,952	616	----	18,336	−14,298
1920	6,704	324	3,957	1,442	982	6,142	1,024	----	5,118	+563
1921	5,585	308	3,228	1,352	697	4,891	997	423	3,472	+693
1922	4,104	358	2,087	1,121	538	3,618	989	422	2,206	+486
1923	3,847	562	1,691	936	658	3,648	1,055	403	2,190	+199
1924	3,884	545	1,842	953	545	3,404	939	458	2,008	+480
1925	3,608	549	1,762	828	470	[3] 2,931	882	467	[3] 1,582	+677
1926	3,908	580	1,974	863	492	3,518	831	487	2,199	+391
1927	4,024	606	2,220	649	549	3,417	788	520	2,109	+607

[1] Less than $500,000.
[2] Figures for 1910.
[3] After deducting $499,000,000 on account of retirement of capital stock of War Finance Corporation.
Source: Treasury Department.

Table 29 shows ordinary receipts of slightly over $4,000,000,000—of which 55 per cent came from income and profits taxes, 15 per cent from customs duties, and the rest from miscellaneous taxes and other sources. Customs receipts passed the $600,000,000 mark for the first time in our history. The increase of $246,000,000 in the collections of income taxes over 1925–26 is especially remarkable, as the revenue act of February 26, 1926, exempted nearly 2,000,000 individuals previously subject to the tax and sharply reduced the rates of tax on the higher brackets of income. Greater prosperity in 1926 was the chief cause of the increase.

The largest item in the reduction of expenditures was that of $45,000,000 in interest on the public debt (Table 28). Military

expenditures increased by $21,000,000, while civil expenditures ("for development and regulation") increased by $14,000,000. The annual report of the Treasury contains these remarks on the nature of our public expenditures:

"The average citizen * * * often visualizes his hard-earned money being spent by the Government to compile reports on business or agricultural conditions, or to erect public buildings, send diplomats abroad, carry on scientific investigations, or make and enforce laws. As a matter of fact, a small part of the taxpayer's dollar goes into work of this sort, only about one-sixth being used for all the multitudinous types of ordinary civil functions added together. One-half of each tax dollar is used for the service of the public debt, the equivalent of 20 cents being required for interest and premium payments and 30 cents for debt retirement. The remaining one-third of the taxpayer's dollar is spent on military expenditures for national defense or payments to military veterans."

Public Debt.

The gross debt of the United States Government on June 30, 1927 (Table 30), was $18,500,000,000, or about $158 per capita; but $260,000,000 of this consisted of noninterest-bearing items such as the circulation of United States notes, less the gold reserve against them. By the end of the calendar year 1927 the gross debt had been reduced to $18,036,000,000. The peak of our national indebtedness, just after the war, was about $26,600,000,000; so the total reduction to the end of 1927 was about $8,600,000,000. The debt reduction during the fiscal year 1926–27 was $1,133,000,000. This reduction was brought about by (1) normal retirements of $520,000,000 appropriated in accordance with the established debt-payment program, including $179,000,000 received from the war debts, and (2) by using the $613,000,000 surplus revenue for debt payment. Debt reduction must long remain one of the major objectives of our public finance, if only for the reason that interest payments on it are so colossal. Interest on the public debt during the fiscal year was $788,000,000—over $6.50 per capita.

Table 30.—Gross Debt of the United States as of June 30

[In millions of dollars]

Year	Amount	Year	Amount	Year	Amount	Year	Amount
1860	65	1895	1,097	1918	12,244	1925	20,516
1865	2,678	1900	1,263	1919	25,482	1926	19,643
1870	2,436	1905	1,132	1920	24,298	1927	18,510
1875	2,156	1910	1,147	1921	23,976	Dec. 31:	
1880	2,091	1915	1,191	1922	22,964	1925	20,248
1885	1,579	1916	1,225	1923	22,350	1926	19,075
1890	1,122	1917	2,976	1924	21,251	1927	18,036

Source: Treasury Department.

Table 31.—Interest-Bearing Debt of the United States, by Maturity

[Amounts in millions of dollars]

Date	Total interest-bearing debt	Maturing within 1 year		Maturing in from 1 to 2 years		Maturing in from 2 to 5 years		Maturing after 5 years	
		Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
Aug. 31, 1919	26,349	4,201	15.9			5,045	19.1	17,103	64.9
Apr. 30, 1921	23,760	2,820	11.9	572	2.4	4,209	17.7	16,158	68.0
June 30, 1922	22,711	4,336	19.1	366	1.6	2,044	9.0	15,965	70.3
June 30, 1923	22,008	1,393	6.3	1,432	6.5	2,647	12.0	16,535	75.1
Dec. 31, 1923	21,643	1,655	7.6	1,324	6.1	5,634	26.0	13,031	60.2
June 30, 1924	20,982	2,328	11.1	927	4.4	4,817	23.0	12,910	61.5
Dec. 31, 1924	20,712	1,710	8.3	1,142	5.5	4,193	20.2	13,666	66.0
June 30, 1925	20,211	1,505	7.4	1,182	5.8	3,567	17.6	13,957	69.1
Dec. 31, 1925	19,982	1,868	9.3	1,135	5.7	3,030	15.2	13,949	69.8
June 30, 1926	19,384	1,664	8.6	500	2.6	2,780	14.3	14,440	74.5
Dec. 31, 1926	18,823	1,773	9.4	2,341	12.4	267	1.4	14,440	76.7
June 30, 1927	18,250	2,557	14.0	2,264	12.4	1,663	9.1	11,766	64.5
Dec. 31, 1927	17,686	3,546	20.0	94	.5	2,252	12.7	11,794	66.7

Source: Treasury Department.

War-Debt Receipts from Foreign Governments.

Table 32 contains a schedule of the payments of principal and interest received during the calendar year from foreign governments and the principal sum due from each at the end of the year. It will be noted that, although France has not ratified the debt-funding treaty signed April 29, 1926, it paid during the year $30,367,000—or slightly more than would have been required by the unratified treaty; such payments will be applied toward the annuities due under the treaty when it is ratified. Late in the year an arrangement was made with Greece for the funding of its indebtedness and for the settlement of our obligation to make certain additional advances to Greece under the terms of an agreement with Greece made early in 1918, and a bill to put this settlement into force was pending in Congress at the end of the year.

Table 32.—Payments Received During 1927 From Foreign Governments on Account of Obligations Due the United States and Indebtedness Outstanding as of December 31, 1927

[In thousands of dollars]

Country	Payments during 1927		Total indebtedness Dec. 31, 1927	Country	Payments during 1927		Total indebtedness Dec. 31, 1927
	Principal	Interest			Principal	Interest	
Total	45,718	160,263	11,847,165	Hungary	10	59	1,942
Armenia			16,720	Italy	5,000		2,032,000
Austria			[1] 34,159	Latvia		[2] 43	6,504
Belgium	2,100	2,125	413,580	Liberia	26	10	
Czechoslovakia	3,000		177,571	Lithuania	32	[3] 95	6,207
Estonia		[2] 150	15,636	Nicaragua			299
Finland	50	264	8,764	Poland		[2] 2,000	200,574
France	10,000	20,367	4,025,000	Rumania	300		66,061
Great Britain	25,000	135,150	4,480,000	Russia			280,197
Greece			19,500	Yugoslavia	200		62,450

[1] Time of payment extended to June 1, 1943, by authority of joint resolution of Congress approved Apr. 6, 1922.
[2] Options under funding agreements.
[3] Due $185,000. Balance funded.

Source: Treasury Department,

AMERICAN BALANCE OF INTERNATIONAL PAYMENTS

An international balance of payments is a statement of the compiled or estimated amounts of all the invisible and visible exports and imports of a country during a given period, so arranged as to show their comparative size, their influence upon the international gold movement, the "detractive" and "promotive" relationships [1] between them, and the volume and character of the nation's foreign-exchange transactions.

In form this statement is the cashbook of our Nation in its foreign dealings. The debit column shows how much dollar exchange was acquired during the year by foreigners, while the credit column shows what they did with it.

Table 33 is a condensed balance of estimated international payments of the United States during the calendar year 1927. A more complete table is given in the "Balance of International Payments of the United States in 1927," Trade Information Bulletin No. 552, published by this bureau. The unabridged table is of service principally in indicating the extraordinary volume, variety, and complexity of the dealings between the 120,000,000 persons within our "balance-of-payment area" and persons outside that area. For example, in 1927 our "international turnover" was about $18,200,000,000, of which nearly half (47.5 per cent) consisted of the so-called "invisible" items of our foreign dealings. The analysis of this turnover raises all the implications of our trade balance, our stupendous underwriting of foreign securities (about $5,000,000 daily), the war-debt receipts, the problems of our merchant marine, our new status in international banking, and other similar questions.

The last column of this summary table shows that (on balance) foreigners bought from us $548,000,000 of commodities and that for interest on our investments abroad and for interest and principal on the war debts they paid us $720,000,000. Practically speaking, that is all the money we got from foreigners, though ocean-borne passenger traffic brought in $89,000,000 and "other" items about $69,000,000. We used all the funds we got from those sources and had to turn over to foreigners $166,000,000 of gold—in order to pay, lend, or give to foreigners $1,509,000,000 for the following: Long-term loans and investments, services to our tourists abroad, gifts of our immigrants to their relatives in the "old country," missionary contributions, transportation services, and lesser items. The delivery of that sum in gold ought to have settled the account to the cent, but this kind of international bookkeeping has, unavoidably, some very large

[1] The law of detractions and promotions in foreign trade may be stated as follows: When the outside world takes more of a particular export (visible or invisible) it can acquire the increased foreign exchange with which to make settlement only by importing less of some other visible or invisible or by inducing the exporting area to import more of some visible or invisible.

errors. In 1927 those errors threw our "books" out of balance by only $6,000,000, but there must have been much larger offsetting errors.

Table 33.—American Cash Dealings With Foreigners During 1927, a Condensed Balance of Payments

[In millions of dollars]

Classes of transactions	Cash claims due from foreigners	Cash claims due to foreigners	Difference
COMMODITY TRANSACTIONS			
	Credits	*Debits*	
Merchandise, silver, etc. (adjusted)	5,037	4,489	+548
MISCELLANEOUS TRANSACTIONS			
Freight: Ocean, Great Lakes, and land transit	140	172	−32
Tourist expenditures	153	770	−617
Ocean-borne passenger traffic	89		+89
Interest on all private foreign investments (long-term and short-term)	795	281	+514
War-debt receipts	206		+206
Government transactions (except war-debt receipts)	57	86	−29
Immigrant remittances	35	241	−206
Charitable and missionary contributions		43	−43
Other items (insurance, motion picture royalties, cable charges, patents, Canadian Electric power, etc.)	199	130	+69
Total, commodity and miscellaneous	6,711	6,212	+499
PRIVATE LOANS, INVESTMENTS, AND DEPOSITS			
New American investments abroad (net cash)		1,648	−1,648
"Backwash"[1] on previous American investments abroad	767		+767
New foreign investments in United States	919		+919
"Backwash" on previous foreign investments here		709	−709
Increase or decrease in debt of American banks to foreigners	(1)	(1)	
Total, private capital	1,686	2,357	−671
BALANCING ITEMS			
Gold shipped or "earmarked"	390	224	+166
Discrepancy due to inaccurate estimates			−6

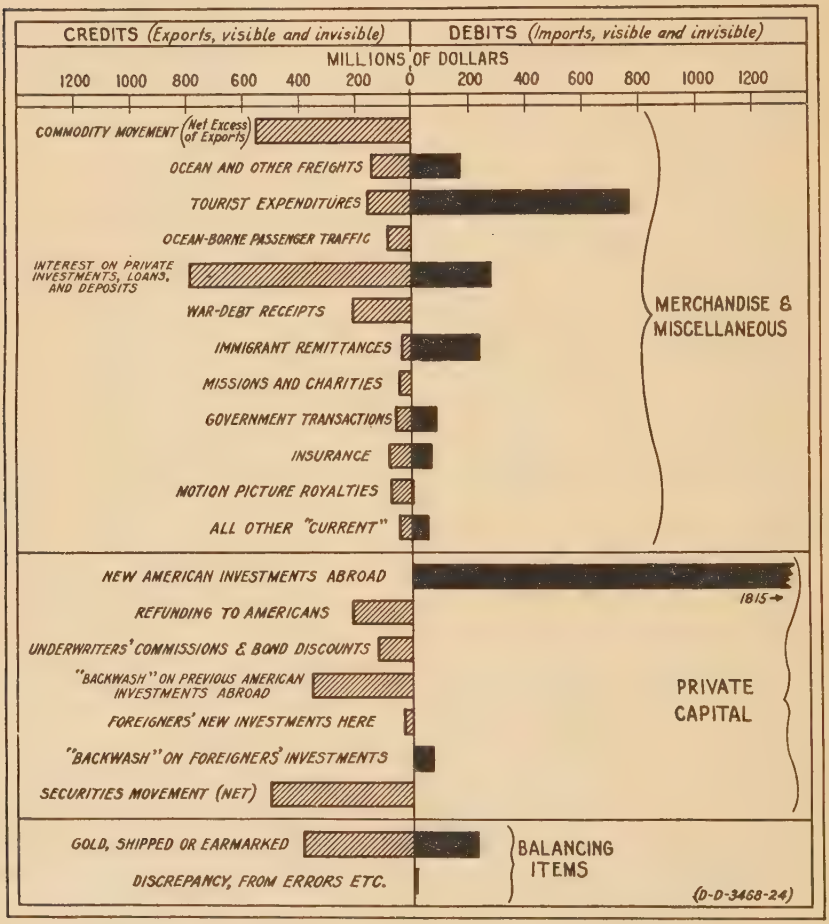
[1] This term includes bond-redemption and sinking-fund payments; also resales to foreigners of our previous holdings of foreign securities and properties.

In 1927 we had, therefore, what is technically termed an "unfavorable" balance of payments; that is, our dealings with foreigners entailed the loss of some of our gold stock. The balance of payments, however, does not of itself explain the gold outflow. During this period of currency reconstruction abroad gold often goes to foreigners as a commodity desired of itself (for vault reserves); it is not always shipped just to settle our international accounts. It should be borne in mind, too, that we annually mine about $15,000,000 more of gold than we use in the arts and should export that much if the domestic demand for gold in our currency and banking systems remained constant.

Likewise there is no simple explanation of why our "favorable" trade balance was about $300,000,000 more in 1927 than in 1926. Trade (or rather the trade balance) tends to follow the loan; and it is

true that (net) we gave foreigners about $426,000,000 more long-term and short-term credit in 1927 than in 1926. Thus, the largest changes occurred in our merchandise trade and in our foreign lending; but it would be superficial to conclude that the larger merchandise balance resulted directly and exclusively from the larger loans.

Chart V.—AMERICAN BALANCE OF PAYMENTS—1927



Trade tends to follow, also, each other item in the balance of payments—and in precisely the same way. The changes in 1927 over 1926 in tourist expenditures, yield from investments, freights, and Government transactions, also were important. Besides, it is well known that, in various ways, the loan follows trade. There is no neat explanation of the yearly changes in the balance-of-payment items; at every turn one is forced back into the complex interrelationships known as "promotive" and "detractive" influences.

The movement in the capital section of the summary table is especially noteworthy. It shows that our net growth as a creditor nation is not so rapid as is sometimes supposed from the figures of new foreign securities issued here. Although we underwrote some $1,593,000,000 of foreign securities and made other important foreign investments, foreigners were buying back or paying off so many of their own securities or were buying so many of ours that the net amount of cash made available to foreigners on loan account was only $671,000,000. Receipts of principal on the war debts would reduce this sum by about $46,000,000. No accurate notion of our international capital movements is possible without bearing in mind these "backwash" movements. Of course the par value of our new acquisitions of foreign investments would be considerably more than this net cash figure—by about $120,000,000, received for underwriters' commissions and bond discounts.

98654—28——44

NONCONTIGUOUS TERRITORIES OF THE UNITED STATES [1]

ALASKA

GENERAL ECONOMIC TRENDS

Conditions in Alaska were generally favorable in 1927, although the salmon catch was considerably smaller than in the record year 1926. The fur industry continued to expand and shipments of furs to the United States were about three times as large as in 1926. Shipments of copper and other minerals declined somewhat. Exports in 1927 were slightly smaller than in most recent years, but imports reached a higher total value than in any year since 1920.

AREA AND POPULATION

The gross area of Alaska is 590,884 square miles, and by the 1920 census the population was 55,036, or a density of 0.09 per square mile. The males numbered 34,539 and the females 20,497. Of the total population 51 per cent were whites, 48 per cent Indians and Eskimos, and 1 per cent Chinese, Japanese, and Negroes. The population at earlier censuses was as follows: 1880, 33,426; 1890, 32,052; 1900, 63,592; and 1910, 64,356.

In 1926, 8,531 pupils were enrolled in schools, with an average attendance of 6,207. There were 3,616 enrolled in native schools and 4,915 in white schools. In 1920 the population 10 years of age and over was 43,768 of whom 10,874, or 24.8 per cent were illiterate.

The principal cities are Juneau and Ketchikan, which had a population in 1920 of 3,058 and 2,458, respectively.

FISHERIES AND CANNING INDUSTRY

Fishing continued to be the largest industry of the Territory. Although the year's catch was below normal, better prices brought the return up to that of 1924 and 1925, through much less than the record figures of 1926. Shipments of salmon to the United States in 1927 reached 180,554,000 pounds, valued at $27,223,000 as compared with 322,917,300 pounds in the preceding year and 217,197,900 pounds in 1925.

[1] The section dealing with noncontiguous territories was published in Volume II of the preceding Yearbook.

Fish Industry

Year	Persons employed	Vessels and boats	Marketable production			
			Quantity (thousands of pounds)		Value (thousands of dollars)	
			Total	Salmon, canned	Total	Salmon, canned
1913	21,721	5,758	233,177	179,472	15,739	13,532
1922	21,974	6,059	311,634	216,096	36,167	29,787
1923	25,246	6,437	315,439	241,728	38,679	32,873
1924	25,194	6,195	337,487	254,156	40,289	33,007
1925	27,685	7,132	333,230	214,077	40,039	31,990
1926	28,052	7,638	427,010	319,338	54,670	46,080
1927	11,030	7,285	289,431	171,461	40,163	30,016

AGRICULTURE AND FUR INDUSTRY

The area used for agriculture and grazing (principally the latter) is estimated at 64,000,000 acres. The raising of reindeer and commercial fur-farming are the chief industries. Small quantities of fruit, potatoes, turnips, and carrots are also produced. The estimated timber stand is 85,000,000,000 board feet. Lumber cut from the two national forests, which cover 20,600,000 acres, was 55,761,000 board feet in 1926.

Reindeer.

Reindeer were introduced into Alaska as an experiment to relieve the poverty of the native population and make it self-supporting. From a beginning of 171 reindeer in 1892, local herds have increased to a total of 350,000 head, of which 235,000 belong to native inhabitants and constitute their chief means of livelihood. In addition to the amount consumed locally, large quantities of frozen and canned meats are shipped annually to the United States. The industry needs a wider market and steps are being taken to popularize the use of reindeer meat throughout the United States. Already, the menu cards of most first-class restaurants of our large cities include reindeer meat from Alaska. Shipments of reindeer meat to the United States in 1927 reached 819,931 pounds against 967,751 pounds in the preceding year.

Fur Seal Industry.

The number of seals in the herds on the Pribilof Islands in 1927 was estimated to be 808,870, as compared with 761,000 in 1926. The number of fur-seal skins taken numbered 22,131 in 1926, the latest year for which data are available, as compared with 19,860 in 1925. Two public auction sales of seal skins were held at St. Louis, Mo., in 1926–27, at which 21,302 skins were sold at a gross price of $475,410.

Fur Farming.

Commercial fur-farming is receiving more attention every year. Fur farms in 1927 numbered about 400 and represented, in livestock and improvements, an investment of approximately $6,000,000. The industry has been placed on a permanent basis by a recently

enacted law making it possible for fur farmers to lease sections of the public domain for the propagation of fur-bearing animals. In 1927 shipments of furs and seal skins to the States were valued at $4,287,461, as compared with $1,548,628 in the preceding year. Blue fox, red fox, silver and black fox, seal, and mink comprised the bulk of these shipments.

MINING

Copper and gold are the principal minerals found in Alaska, though considerable quantities of lead, palladium, and tin are recovered as by-products. Shipments of all minerals to the United States in 1927 were smaller than in the preceding year. The total value of mineral production was $17,657,800 in 1926. The quantity of gold produced was in 1913, 735,364 fine ounces; in 1922, 345,630; in 1923, 314,960; in 1924, 303,553; in 1925, 301,212; in 1926, 325,186; and in 1927, 286,298 ounces. Silver production amounted in 1913 to 366,700 fine ounces; in 1922, 770,232; in 1923, 816,177; in 1924, 690,781; in 1925, 766,096; in 1926, 707,454; and in 1927, 606,129 ounces.

The metal content of copper produced was in 1913, 10,830 short tons; in 1922, 38,984; 1923, 42,960; in 1924, 37,037; in 1925, 36,928; and in 1926, 33,889 tons.

TRANSPORTATION AND COMMUNICATION

There are 750 miles of railway line. The Alaska Railway operated 555 miles and during 1926–27 carried 54,000 passengers and 82,000 tons of freight; revenue from rail service was $1,246,000. On June 30, 1927, there were 170 post offices, and gross receipts for the fiscal year were $81,300. There are 762 miles of telegraph wire and 4,589 miles of cable; during 1926–27, 237,000 messages were sent, and gross receipts were $492,000. In 1925 the estimated length of telephone wire was 4,300 miles and the number of instruments 2,170.

Aviation continued to make progress during the year. Three commercial companies were operating a total of eight planes at the end of the year and were finding employment in carrying passengers and freight to hunting grounds, trappers' runs, isolated villages, and mines located at remote points. Aviation promises to aid in the development of the Territory.

TRADE WITH UNITED STATES AND FOREIGN COUNTRIES

Alaska's trade with the United States in 1927 registered an increase in imports, but exports declined from the high figure of 1926 when the salmon pack was abnormally large. Imports from the United States and foreign countries during the year increased to the value of $36,370,000 from $32,131,000 in 1926, while exports declined from $73,822,000 to $51,808,000.

Exports to the United States consist largely of canned salmon and other fish products; minerals, including gold, silver, and copper; furs;

and reindeer meats. Imports from the United States include a very wide variety of commodities but consist chiefly of metals and manufactures, of which tin cans form an important item; machinery and vehicles, chemicals, wood and paper, grains and cereal products, tobacco, and petroleum and petroleum products.

Alaska's trade with foreign countries is small.

Trade Statistics.—The figures for Alaska are compiled by the Department of Commerce of the United States in the same way and on the same basis as the figures of United States trade. Per capita imports and exports of Alaska in 1927 were $661 and $941, respectively.

The merchandise figures are for general imports, whether or not for consumption, and for general exports (including reexports). Gold and silver, though shown, are not included in the totals. Entrances of vessels from foreign countries much exceed clearances for such countries because many go to the United States.

Value of Trade (in Thousands of Dollars)

Yearly average or year	Merchandise imports, general			Merchandise exports, general			Shipments, domestic gold, to United States
	From United States	From other countries	Total	To United States	To other countries	Total	
1903–1905	11,839	937	12,776	9,899	1,293	11,192	9,174
1906–1910	17,178	416	17,594	12,486	1,330	13,816	16,338
1911–1915	20,751	672	21,423	25,329	1,189	26,518	14,677
1916–1920	37,088	1,382	38,470	67,306	1,845	69,151	10,542
1921–1925	28,217	739	28,956	50.731	1,279	52,010	5,788
1910	17,431	670	18,101	13,700	1,120	14,820	15,183
1911	15,169	519	15,688	19,319	1,174	20,493	14,578
1912	21,993	925	22,918	24,794	1,453	26,247	15,827
1913	21,690	751	22,441	22,253	1,142	23.395	12,810
1914	21,611	663	22,274	25,816	1,010	26,826	14,598
1915	23,293	501	23,794	34,464	1,168	35,632	15,569
1916	30,835	1,579	32,414	63,264	1,810	65,074	15,547
1917	39,838	1,196	41,034	76,864	3,116	79,980	14,300
1918	40,412	1,176	41,588	74,987	1,218	76,205	8,213
1919	37,476	1,450	38,926	60,480	1,542	62,022	8,105
1920	36,877	1,512	38,389	60,939	1,530	62,469	6,543
1921	19,274	935	20,209	36,917	1,445	38,362	6,543
1922	26,778	871	27,649	51,083	1,371	52,454	6,641
1923	30,631	515	31,146	53,761	1,326	55,087	5,932
1924	32,046	530	32,576	54,974	1,352	56,326	4,603
1925	32,353	847	33,200	56,919	902	57,821	5,220
1926	31,587	544	32,131	73,300	522	73,822	5,743
1927	35,604	766	36,370	51,324	484	51,808	5,378

Shipments to the United States, by Principal Commodities

Commodity	Quantity (000 omitted)				Value (thousands of dollars)			
	1913	1925	1926	1927	1913	1925	1926	1927
Total					20,601	54,938	70,595	49,245
Fish—pounds	(1)	286,107	371,316	231.067	15,516	36,129	54,499	34,164
Halibut, fresh or frozen—do	(1)	10,803	14,647	17.111	(1)	1,190	2,023	2,283
Herring, cured or preserved—do	(1)	39,855	16,932	14,509	(1)	3,280	1,513	1,460
Salmon, canned—do	177,449	217,198	322,917	180,554	12,349	28,706	48,336	27,223
Salmon, cured or preserved—do	(1)	7,028	7,152	8,465	(1)	1,308	1,265	1,859
Fish oil—gallons	674	2,409	3,020	2,033	243	1,016	1,350	856
Furs and fur skins—number [2]	(1)	644,217	106,577	318,692	673	4,255	1,549	4,287
Sealskins—do [2]	2,296	19,680	22,779	25,969	92	492	586	508
Copper in ore, matte, etc—pounds	24,498	79,271	72,060	61,464	3,765	11,529	10,772	8,510
Gold and silver [3]					12,959	5,682	6,161	5,745
Gold bullion, refined—ounces	580	(1)	(1)	(1)	10,376	3,955	4,710	4,284
Gold, other					2,434	1,264	1,033	1,094

[1] Not shown. [2] Full number (000 not omitted). [3] Not included in the totals.

Merchandise Received from the United States by Principal Commodities

Commodity	Quantity (000 omitted)				Value (thousands of dollars)			
	1913	1925	1926	1927	1913	1925	1926	1927
Total					21,097	32,353	31,587	35,604
Meats—pounds	(1)	8,308	8,188	8,724	1,530	1,822	1,923	1,943
Dairy products—do	6,614	6,793	6,763	7,153	938	1,262	1,215	1,332
Butter—do	1,402	1,511	1,467	1,579	475	717	671	738
Eggs—dozen	1,453	1,524	1,506	1,606	427	625	568	558
Grains and products					772	943	833	856
Wheat flour—barrels [2]	56,208	50,568	43,836	49,086	261	455	379	395
Vegetables					507	881	756	816
Fruits					531	887	813	939
Coffee—pounds	696	884	833	929	184	380	383	385
Sugar—do	5,670	6,466	6,346	6,864	282	420	393	445
Tobacco					649	807	844	824
Cigarettes—number	5,966	46,229	52,350	55,050	47	301	345	356
Cotton manufactures					463	488	540	659
Cordage and twine—pounds	(1)	2,088	3,206	2,189	126	753	853	653
Clothing					1,020	969	866	973
Wood					1,028	2,022	1,500	1,831
Boards, planks, deals—board feet	19,984	20,131	13,725	20,097	335	552	399	545
Box shooks—sets	(1)	2,786	[3] 10,276	[3] 15,660	312	570	340	533
Rubber manufactures					341	425	417	434
Coal—tons [2]	61,666	33,325	31,804	35,217	313	333	289	327
Petroleum and products					895	2,227	1,815	1,884
Gasoline—barrels [2]	41,325	166,512	120,704	193,847	273	1,145	870	916
Iron and steel					2,487	8,084	8,854	9,042
Tin plates—pounds	25,496	25,267	24,387	30,796	1,054	1,766	1,442	1,792
Wire—do	(1)	8,516	8,703	12,766	(1)	844	868	1,167
Tin cans—do	(1)	28,424	44,170	35,521	(1)	3,051	4,176	3,490
Machinery					2,354	2,670	2,555	4,280
Electrical					343	552	470	647
Mining—pounds	(1)	2,424	1,151	1,701	1,008	441	251	230
Vehicles					191	513	595	722
Chemicals					220	434	391	506
Explosives—pounds	(1)	3,020	2,559	2,548	677	469	357	367
Dynamite—do	4,323	2,840	2,440	2,377	514	397	314	313
Books, pictures, printed matter					260	389	393	433

[1] Not shown. [2] Full number (000 not omitted). [3] Quantity stated in thousands of board feet.

Entrances and Clearances of Vessels in Trade with Foreign Countries

	1913–14	1925	1926	1927
ENTRANCES				
Total number of vessels	370	1,369	1,201	1,225
Thousands of net registered tons, total	208	333	320	333
With cargo—				
Number of vessels	190	238	229	200
1,000 net registered tons	133	157	182	191
In ballast—				
Number of vessels	180	1,131	972	1,025
1,000 net registered tons	75	176	138	142
By flag:				
American—				
Number of vessels	250	1,106	981	980
1,000 net registered tons	141	101	144	149
Foreign—				
Number of vessels	120	263	220	245
1,000 net registered tons	67	232	175	183
CLEARANCES				
Total number of vessels	352	659	492	501
Thousands of net registered tons, total	174	303	241	255
With cargo—				
Number of vessels	182	254	286	281
1,000 net registered tons	117	143	149	160
In ballast—				
Number of vessels	170	405	206	220
1,000 net registered tons	57	160	92	96
By flag:				
American—				
Number of vessels	230	396	268	262
1,000 net registered tons	113	70	67	77
Foreign—				
Number of vessels	122	263	224	239
1,000 net registered tons	61	233	174	179

FINANCE

The condition of the Territorial treasury for the year ended December 31, 1926, was as shown in the following statement:

Balance of cash on hand Jan. 1, 1926	$257, 386
Total receipts from all sources	1, 248, 662
Total disbursements under appropriations made by the Territorial legislature	892, 038
Balance of cash on hand Dec. 31, 1926	614, 010

The Territory has no funded debt. The currency is that of the United States.

HAWAII

GENERAL ECONOMIC TRENDS

Hawaiian business was unusually active in 1927. Imports and exports were of record proportions, building and construction projects were numerous, shipping facilities were augmented, banking institutions were prosperous, and agriculture had one of its best years in the history of the islands. Tourist traffic was heavy, justifying the additional transportation and housing facilities provided in anticipation. Considerable scientific progress was made in cane and pineapple culture during the year.

Imports from continental United States reached a new high record and exports were the greatest since 1921, showing a sharp advance over 1926. Trade with foreign countries was small with imports less than in the preceding year but exports greater.

The agricultural yield during 1927 was entirely satisfactory and prices received for major commodities yielded fair profits. The production of sugar was valued at approximately $77,000,000, while pineapples added $34,000,000, coffee $2,000,000, and bananas $250,000.

AREA AND POPULATION

The gross area of Hawaii is 6,449 square miles, and, according to the 1920 census, the population was 255,912, of which 151,146 were males and 104,766 females. The population per square mile was 39.7. The growth of the population has been as follows: 1866, 62,959; 1890, 89,990; 1900, 154,001; 1910, 191,909; 1920, 255,912; and 1928 (estimated), 311,900. The population of the principal islands in 1920 was as follows: Oahu, 123,496; Hawaii, 64,895; Maui, 36,080; and Kauai, 29,247.

In 1920 Japanese formed 43 per cent of the total population; Hawaiians, 16; Portuguese, 11; Chinese, 9; Filipinos, 8; and other races, 13 per cent. In 1927 there were 12,296 births and 3,929 deaths. The corresponding rates per 1,000 inhabitants were 37.2 and 11.9. The average rates for the five-year period 1923 to 1927 were 39.2 and 13.4, respectively.

In 1926–27 there were 62,208 pupils in public schools, of whom 52 per cent were Japanese; 10,316 in private schools, and 840 (excluding extension students) in the University of Hawaii.

The population of Honolulu at the census of 1920 was 83,237 and the estimated population in 1927 was 106,600. The corresponding figures for the city of Hilo were 10,431 and 12,394, respectively.

AGRICULTURE

Hawaii is predominantly an agricultural country. The principal products are sugar and pineapples. Coffee, bananas, rice, sisal, tobacco, and cotton are also produced.

Sugar and Molasses.

The production of raw cane sugar during the crop year from October, 1927, to September, 1928, is estimated to be approximately 816,000 short tons, as against a production of 811,000 short tons in 1926–27. About 70,000 acres were irrigated in 1927 and yielded an average of 7.81 short tons per acre, as compared with 4.635 short tons per acre for the nonirrigated area. The price received for sugar during 1927 was better than in the preceding year. Exports of sugar to continental United States were about one-fifth greater in value than in 1926, the increase being due to both increased shipments and better prices. A greatly reduced demand for molasses from the continent caused shipments of that commodity to decline sharply. Research to find new uses for molasses continued.

Pineapples and Bananas.

The pineapple pack of 1927 reached 8,897,000 cases (of 24 cans each), closely approaching the record pack of 1926 when a total of 8,940,000 cases were produced (in 1925, 8,729,000; 1924, 6,826,000; 1923, 5,896,000). As in the preceding year, weather conditions were favorable during the canning season and the quality of the pack was excellent. Demand continued good on the mainland, where practically all of the pack is marketed, and the price return was high. Advertising was continued in the mainland press and it appears that consumption is keeping well abreast of production. Stocks enjoyed good distribution and were low at the beginning of each new pack. Shipments of fresh fruit to the mainland continued to be scant.

Shipments of bananas to the mainland declined both in quantity and price during the year. Caribbean competition continues to be felt in this industry and no expansion is contemplated in the near future.

Coffee.

The coffee crop declined to about 60,000 bags for the year but exports to the mainland were about three times greater than in the preceding year. Considerable effort is being made in the islands to

stimulate interest in the cultivation of coffee, but competition from South America prevents great progress. Kona coffee has a distinctive flavor which it is believed will lend itself to exploitation.

Livestock.

A census of cattle taken during 1927 placed the number at 135,000 with an appraised value of $3,500,000, making ranching Hawaii's third largest industry. In 1924 there were 132,800 cattle, 14,300 swine, 26,000 sheep, and 22,000 horses, mules, and asses.

MANUFACTURING AND CONSTRUCTION

Little manufacturing is done in Hawaii. Pineapples and sugar, the two important agricultural commodities of the islands, are processed and made ready for the market. Pineapples are prepared and canned ready for customer comsumption, but sugar is only reduced to the raw state and shipped to the mainland, where the final manufacturing process is applied. Other industrial enterprises include the manufacture of cans, iron and steel, and certain types of machinery, ice-cream plants, etc. Effort is being made to attract manufacturing plants to the islands, as it is believed that many commodities can be efficiently produced there.

Building and construction activity continued high in 1927. Several projects of importance were completed and more were commenced. A concrete road 29 miles long linking Hilo with Kilcauea National Park was completed, and a new modern hotel was opened at Waikiki Beach to provide accommodations for the growing tourist trade. Other projects completed or commenced included sewer extensions, irrigation projects, municipal and private building of various kinds, harbor dredging, and wharf construction.

TRANSPORTATION AND COMMUNICATION

Automobile transportation facilities in the islands were improved in 1927 by the addition of considerable mileage of concrete and improved roadways, and interisland communication was further improved. The Dole Derby stimulated interest in aviation and landing fields on all the principal islands were planned.

During the fiscal year ended June 30, 1927, a total of 1,089 steam vessels and 10 sailing vessels, with a combined tonnage of 8,228,331 tons, called at Hawaiian ports. This represented an increase of 47 vessels and 158,146 tons.

There are 371 miles of line in Hawaii operated by railway companies. During 1926–27 there were 1,100,000 passengers and 2,065,000 tons of freight carried. Plantations also have private railway equipment for transporting cane and laborers.

There are 94 post offices, and gross receipts for the year ending June 30, 1927, were $645,000. There were 64,204 miles of telephone wire and 20,617 instruments on June 30, 1927.

TRADE WITH UNITED STATES AND FOREIGN COUNTRIES

Trade With Continental United States.

Shipments of goods from continental United States continued to be wide in range, including practically every class of manufacture produced on the mainland. The total value reached $79,665,662, compared with $76,262,624 in the preceding year, and has been exceeded only once in the history of the islands. Vegetable food products and beverages, textile products, lumber, nonmetallic minerals, machinery, vehicles, and chemicals are among the most important products shipped from the mainland to Hawaii.

Value of Trade in Merchandise (Thousands of Dollars)

Yearly average or year	General imports			General exports		
	From United States	From other countries	Total	To United States	To other countries	Total
1903–1905	11,667	3,261	14,928	30,787	50	30,837
1906–1910	17,058	4,465	21,523	37,785	278	38,063
1911–1915	26,435	5,975	32,410	50,427	628	51,055
1916–1920	49,313	8,426	57,739	105,061	2,974	108,035
1921–1925	65,429	9,085	74,514	91,488	1,490	92,978
1910	21,927	5,200	27,127	44,225	395	44,620
1911	22,119	4,990	27,109	48,087	834	48,921
1912	28,262	5,984	34,246	51,428	554	51,982
1913	29,943	6,871	36,814	41,346	999	42,345
1914	23,015	6,111	29,126	48,307	459	48,766
1915	28,836	5,920	34,756	62,969	292	63,261
1916	35,674	6,588	42,262	72,689	445	73,134
1917	46,971	6,580	53,551	86,110	1,245	87,355
1918	39,883	7,697	47,580	75,760	5,043	80,803
1919	49,984	8,981	58,965	98,363	4,702	103,065
1920	74,052	12,285	86,337	192,383	3,438	195,821
1921	64,446	9,530	73,976	71,669	1,351	73,020
1922	53,586	7,497	61,083	73,432	1,257	74,689
1923	66,421	8,685	75,106	101,086	1,581	102,667
1924	69,768	8,884	78,652	108,473	1,416	109,889
1925	72,924	10,829	83,753	102,780	1,845	104,625
1926	76,263	10,255	86,518	98,261	1,884	100,145
1927	79,666	9,172	88,838	109,236	2,268	111,504

Shipments to the United States by Principal Commodities

Commodity	Quantity (000 omitted)				Value (thousands of dollars)			
	1913	1925	1926	1927	1913	1925	1926	1927
Fruits					4,268	33,863	34,229	33,842
Canned pineapples, pounds	(1)	402,558	410,286	408,161	4,055	33,562	33,928	33,502
Coffee, do	3,393	3,590	1,718	5,435	530	980	472	1,398
Sugar, do	1,075,592	1,510,317	1,494,261	1,553,071	34,447	63,300	59,043	69,828
Unrefined, do	1,047,587	1,494,090	1,475,014	1,525,626	33,154	62,323	57,952	68,143
Refined, do	28,005	16,227	19,247	27,445	1,293	977	1,091	1,685
Molasses, gallons	3,314	19,982	16,964	13,868	117	926	763	570

[1] Not shown.

Exports from Hawaii to the mainland are made up largely of raw sugar and canned pineapples. Molasses, fresh pineapples, bananas, honey, coffee, tallow, and beeswax are also shipped in smaller quantities. Effort is being made to widen the list of exportable products and some progress is apparent. Exports to the mainland in 1927 reached the high value of $106,369,515, which compared with $95,293,606 for the preceding year. This export record has been exceeded only once by Hawaii.

Merchandise Received from the United States, by Principal Commodities

Commodity	Quantity (000 omitted)				Value (thousands of dollars)			
	1913	1925	1926	1927	1913	1925	1926	1927
Meats					563	1,531	1,569	1,726
Dairy products ---- pounds	4,523	7,233	7,375	8,126	638	1,314	1,388	1,574
Milk, condensed or preserved ---- do	3,297	5,804	5,804	6,314	282	734	738	792
Fish ---- do	[1]	6,851	5,349	5,753	348	1,000	849	928
Grains and products					1,797	5,740	6,146	5,447
Rice ---- pounds	6,066	47,304	65,607	68,285	280	3,298	4,233	3,567
Wheat flour ---- barrels [2]	148,048	138,915	126,960	138,252	627	1,187	975	974
Vegetables					384	1,371	1,407	1,445
Fruits					333	1,144	1,131	1,333
Bran, middlings, mill feeds ---- tons [2]	32,792	26,238	35,533	40,722	836	1,306	1,503	1,758
Tobacco					755	2,347	2,182	2,279
Cigarettes ---- number	34,619	201,407	211,917	211,976	163	1,276	1,190	1,348
Leather and manufactures					719	1,146	1,036	1,208
Boots and shoes ---- pairs [2]	245,466	262,985	250,462	287,786	452	823	732	838
Cotton manufactures					1,518	2,701	2,737	3,151
Cotton cloth ---- square yards	[1]	7,431	7,411	8,478	653	1,711	1,551	1,578
Clothing					1,008	1,906	1,842	1,774
Cotton clothing					953	1,098	1,092	1,048
Wood					1,865	4,503	4,434	4,121
Boards, planks, deals ---- board feet	61,555	71,056	72,199	73,672	977	1,956	1,889	1,779
Box shooks ---- sets	2,587	5,253	[3] 30,232	[3] 21,440	203	1,021	970	707
Paper					450	1,717	1,748	2,099
Rubber manufactures					558	1,660	1,927	2,185
Automobile casings and tubes ---- number [2]	[1]	168,087	165,111	213,397	373	1,321	1,582	1,619
Mineral oils					1,826	8,154	8,643	8,491
Gasoline, naphta, etc ---- barrels [2]	49,002	454,272	479,905	685,124	315	2,723	3,114	3,685
Iron and steel					4,637	10,346	9,636	9,255
Tin plates ---- pounds	12,415	66,634	63,706	57,660	502	4,372	3,819	3,333
Machinery					1,865	4,303	4,625	5,539
Electrical					637	1,492	1,551	1,665
Vehicles					1,377	5,218	4,842	6,304
Automobiles ---- number [2]	597	5,248	4,750	5,471	1,007	4,195	3,775	4,807
Chemicals					407	1,121	1,299	1,180
Paints, pigments, varnishes					258	868	900	929
Fertilizers ---- tons [2]	16,889	31,705	38,068	33,548	817	1,566	1,847	1,542

[1] Not shown. [2] Full number (000 not omitted). [3] Quantity stated in thousands of board feet.

Trade with Foreign Countries.

Only a small amount of Hawaii's overseas trade is with foreign countries and consists generally of products in which the United States can not compete. Imports from foreign countries were valued at $9,171,815, as compared with $10,254,565 in 1926, and consisted chiefly of jutes from India, silks from China and Japan, nitrates from Chile, native foodstuffs from Japan, and meats and butter from Australia and New Zealand.

Exports to foreign countries were valued at $2,267,714, compared with $1,884,079 in the preceding year. They go principally to

Canada, the United Kingdom, and the Philippine Islands and consist largely of canned pineapples.

Basis of Statistics.—Statistics for Hawaii, both as to trade with continental United States and that with foreign countries, are compiled by the Department of Commerce of the United States in the same way and on the same basis as the figures of United States trade.

Including trade with the United States the per capita imports and exports of Hawaii in 1927 were $266 and $334, respectively.

The summary table and the table by countries show general imports, whether or not for consumption, and general exports, including reexports. Tables, by commodities, contain trade with the United States only. Gold and silver are excluded from all the tables.

Trade in Merchandise with Principal Countries (in Thousands of Dollars)

Country of origin or destination	General imports			General exports		
	1913	1925	1926	1913	1925	1926
Total	36,814	83,753	86,518	42,345	104,625	100,145
United States	29,943	72,924	76,263	41,346	102,780	98,261
Per cent of total	81.34	87.07	88.15	97.64	98.25	98.12
Chile	613	2,461	2,848			
Germany	667	240	299	122	(1)	4
United Kingdom	664	155	127	67	488	344
British India	929	1,543	1,270	1	1	1
Hong Kong	399	728	541	9	23	17
Japan	2,741	3,463	2,977	37	111	113
Philippine Islands	128	365	371	624	688	757
Australia	516	387	367	11		18
New Zealand	19	696	530	1	39	41

[1] Less than $500.

FINANCE

Revenue of the Territorial government for the fiscal year ended June 30, 1927, reached $10,406,000, as against $10,511,000 for the preceding fiscal year; personal property taxes accounted for $4,148,000 and income tax for $1,567,000. Expenditures for current purposes and fixed charges amounted to $12,293,000, as against $8,815,000 during the preceding year. The cash balance in the treasury on June 30, 1927, amounted to $1,972,000.

The public debt on June 30, 1927, amounted to $24,210,000, as against $22,070,000 at the end of the preceding fiscal year. The increase was owing to bond issues for public improvements.

Commercial bank deposits on June 30, 1927 (29 banks), totaled $47,922,000, as compared with $44,862,000 on June 30, 1926; savings deposits were $27,102,000 and $22,990,000, respectively.

The currency is that of the United States.

PHILIPPINE ISLANDS

GENERAL ECONOMIC TRENDS

Generally favorable economic conditions prevailed throughout 1927 and practically all branches of business registered prosperity. Production of leading crops was wholly satisfactory and in most instances

the large output was disposed of at fair prices. Money was abundant for investment and for construction works, both private and public. Industrial expansion was marked, especially the extension of sugar centrals.

Credit conditions among Chinese dealers improved steadily, with the exception of rice traders, who were adversely affected by low prices. Owing to the prevailing prosperity, luxury sales were on a higher level than the previous year and generally increased purchasing power was reflected in both retail and wholesale trade.

Export trade registered a substantial increase, due chiefly to heavier sugar shipments. Imports were slightly under 1926, mainly as the result of decreased purchases of cotton goods and rice, but imports of iron and steel products and machinery advanced materially. The favorable balance of trade was the largest in the history of the islands.

Government finances were in excellent condition, with a substantial surplus of revenue, and Government-operated business enterprises recorded material profits.

AREA AND POPULATION

The gross area of the Philippine Islands is 114,400 square miles and by the census of 1918 the population was 10,314,310. The estimated population in 1928 was 11,921,600, or a density of 104.2 per square mile. The population at the different censuses is shown as follows: 1900 (estimated), 6,961,339; 1903, 7,635,426; 1918, 10,314,310; and 1928 (estimated), 11,921,600.

During the years 1923 to 1927 the average annual birth rates per 1,000 inhabitants were, for the city of Manila 47.3 and for the Provinces 33.7, and the corresponding death rates were 25.6 and 19.1. The average number of immigrants per year from 1923 to 1927 was 10,165 and of emigrants 906, the excess of immigrants being 9,259.

In 1927 the total enrollment in the public schools was 1,099,127 and in private schools 86,695. In the university there were 5,858 students with collegiate standing and 1,675 in the subcollegiate grade.

The population of the principal cities in 1918 was: Manila, 285,306 (1924 estimated, 314,000); Cebu, 65,502; Legaspi, 52,756; Iloilo, 49,114; Lipa, 46,577; San Carlos, 42,453; Batangas, 41,089.

AGRICULTURE

Rice.

The year's rice crop of 106,299,000 bushels was the largest in the history of the islands, thereby greatly reducing the country's dependence upon imports to supplement domestic production of its staple foodstuff. Imports of rice, chiefly from Saigon, totaled approximately 12,000 metric tons in contrast to 70,000 tons in 1926. As a result of the abundant supply, however, prices remained at an

exceedingly low level throughout the year. In the hope of relieving the situation the Governor General authorized lifting of the embargo on exports of rice to countries other than the United States for four months beginning November 1, but shipments were very small and the effect on the market was negligible.

Crops: Area, Production, and Yield per Acre

Crop	Area (thousands of acres)				Production (thousands of units—pounds except as indicated)				Yield per acre (pounds)	
	1913	1921–1925	1926	1927	1913	1921–1925	1926	1927	1921–1925	1927
Rice	2,820	4,188	4,342	4,465	[1] 51,258	[1] 92,129	[1] 100,825	[1] 106,299	[1] 22.0	[1] 23.8
Corn	948	1,338	1,317	1,387	[1] 9,994	[1] 16,843	[1] 18,038	[1] 17,844	[1] 12.6	[1] 12.9
Manila hemp	1,081	1,245	1,216	1,186	310,849	351,180	370,373	380,901	282.1	321.2
Tobacco	170	178	183	207	101,544	88,518	100,199	110,706	497.3	534.8
Coconuts	552	1,146	1,198	1,241	[2] 781,586	[2] 1,554,293	[2] 1,627,379	[2] 1,798,519	[2] 1,356.3	[2] 1,449.2
Coffee	2	2	2	2	249	2,585	2,661	2,667	1,292.5	1,333.5
Cacao	3	3	4	3	1,294	2,330	2,388	2,401	776.7	800.3
Sugar [3]	435	576	------	586	642,391	1,134,247	1,186,000	1,107,300	1,969.2	1,889.6

[1] Unit, bushel. [2] Unit, number. [3] Seasons ended following year.

Sugar.

A record sugar crop was the outstanding agricultural feature of 1927. The milling season which closed in June yielded 538,000 metric tons of centrifugal sugar, which was about 30 per cent above the output of the previous year. The bulk of the crop was marketed at prices considerably higher than those which prevailed in 1926 and a number of Government-owned sugar centrals were able to reduce materially their indebtedness to the Philippine National Bank. Sugar exports for the year were valued at nearly $50,000,000, compared with $32,000,000 in 1926.

Abaca.

Production of abaca, totaling 380,901,000 pounds, was slightly in excess of the output in 1926, and in consequence of revised grading laws, effective in 1927, the quality was improved. Demand for the fiber, however, slackened in both the United States and Europe and the quantity exported fell from 1,186,000 bales the previous year to 1,136,000 bales in 1927. The trend of abaca prices was steadily downward throughout the year, especially in United States grades.

Tobacco.

The year's tobacco trade was unfavorable. Stocks on hand at the beginning of 1927 were heavy and a considerable portion of the new crop was unsold at the close of the year. In addition to heavy dealers' stocks, farmers of Cagayan and Isabela Provinces were left with much inferior tobacco on their hands. Inclement weather during the planting season resulted in a large percentage of poor quality leaf which was eliminated by selective buying. Accumulated

stocks of tobacco at the beginning of 1928 totaled 147,400,000 pounds, about 20 per cent heavier than a year earlier.

Coconuts.

The yield of coconuts was only 10 per cent over the crop of 1926 and demand for the nuts was steady throughout the year, and the output and export of coconut products reached high levels. The total value of all coconut products shipped abroad was only slightly smaller than the value of sugar exports.

Rubber.

There were no developments of importance in rubber production and, on the basis of seedlings distributed, the year witnessed decreasing interest in the industry. Compared with 367,900 in 1926, a total of 136,700 seeds were allotted to farmers by the Bureau of Agriculture for the establishment of small-scale plantations. Exports of rubber, which may be taken to represent production, amounted to approximately 280 metric tons, a slight increase over the previous year.

Livestock.

In 1927 there were 1,137,000 cattle, 1,890,000 carabaos, 10,612,000 swine, 407,000 sheep, 1,554,000 goats, and 314,000 horses and mules.

MANUFACTURING AND MINING

Coconut Products.

During 1927 copra production was heavy, the year's output totaling 448,000 metric tons, or the largest in recent years. Foreign demand was good throughout the year and the market was active. Prices were well maintained, advancing at the close of the year to abnormally high levels, as the result of curtailment in supplies in the last two months.

Coconut oil mills experienced a comparatively active year, increasing their output to approximately 147,000 tons. Exports of coconut oil advanced 23 per cent in quantity and 11 per cent in value, compared with 1926.

Desiccated coconut plants used the equivalent of 20,000 tons of copra in their operations. Demand and prices were good and the steady development, which has been under way since 1923, continued. Exports of desiccated coconut increased in both quantity and value.

As a result of the greater production of coconut oil, supplies of copra meal were larger and the quantity exported advanced 27 per cent, with an increase of nearly 1,500,000 pesos ($750,000) in value

Cigars.

The cigar trade suffered from continued slack demand in the United States, the principal market. Shipments to the United States, totaling 173,000,000, were 16 per cent under 1926, which in turn was

considerably under 1925. The sale of cigars in China, the second market, was also curtailed because of unsettled tax and duty situations there. For a time several factories were forced to close. Manufacturers recognize the growing difficulty in competing with machine-made cigars and are seriously endeavoring to reduce production costs. Special measures were planned in 1927 to render government aid to the industry.

Lumber.

Lumber companies experienced a good year and many new operations were begun, while some companies expanded their activities considerably in anticipation of the many construction projects contemplated for 1928. Production of lumber in 1927 reached the record amount of over 400,000,000 board feet, of which 70,000,000 were exported.

Principal Products Mined or Manufactured

[Figures in thousands, calendar years except as indicated]

Product	1913	1925	1926	1927	Product	1913	1925	1926	1927
Gold----troy ounces--	42	94	91	79	Coconut oil--met. tons--	[1] 119	120	119	147
Coal----met. tons--	[1] 16	49	54	------	Timber, cut----cu. ft--	[3] 9,788	30,908	34,062	40,281
Cigarettes----thous--	4,385	4,849	4,955	4,955	Rattan:				
Cigars----do----	282	359	358	317	Split----met. tons [4]--	[3] 3,066	3,028	2,715	2,446
Copra [2]----met. tons--	117	362	378	448	Unsplit----feet--	------	26,707	35,855	21,614

[1] 1918. [2] Years ended June 30. [3] Fiscal year.
[4] Full number (not in thousands). Figure for 1913 includes unsplit rattan.

TRANSPORTATION AND COMMUNICATION

There are 791 miles of railway line in the Philippines. In 1926 there were 10,006,000 passengers carried and 1,709,000 tons of freight; gross receipts were 12,518,000 pesos ($6,259,000). In 1927 there were 943 post offices, 1,623,000 pieces of mail were registered, and gross receipts were 4,085,000 pesos ($2,043,000). There were 9,700 miles of telegraph wire, 4,793,000 messages were sent, and gross receipts of the government system were 1,369,000 pesos ($684,500). There were 34,486 miles of telephone wire and 17,500 instruments.

FOREIGN TRADE

Exports.

There was a record export balance in 1927 of $39,750,000, compared with $17,585,000 in 1926. The increase of $18,000,000 in export trade was accounted for almost entirely by larger value of sugar shipments. Exports of coconut oil and leaf tobacco were larger than in 1926. The value of abaca exports, however, was smaller, largely as the result of lower prices, while the quantity of cigars and cigarettes exported was considerably smaller. Approximately 75 per cent of the export trade was with the United States,

Great Britain, Japan, and Spain ranking next as markets for Philippine produce.

Imports.

Imports decreased $3,500,000 in 1927, owing chiefly to decreases in imports of cotton piece goods and rice. The principal increases in import trade were shown by iron and steel products, electrical machinery, fertilizers, tobacco products, rubber tires, automobiles, and meat and dairy products.

The United States supplied 61.7 per cent of the total import trade, compared with 60.5 per cent in 1926, and Japan, China, and Great Britain followed in the order named.

Import Market Tendencies.

Further development of installment buying was noted in retail transactions in 1927, and the steady increase in direct importing by dealers, particularly Chinese, continued. These factors tended to increase competition and to lower importers' profits in the lines affected.

The most important commodity in the import trade, textiles, opened the year with heavy stocks, caused by the failure of a number of Chinese dealers in the latter part of 1926. As the year advanced demand became brisk and prices improved until September, enabling dealers to realize good profits. In the last quarter, however, excessive ordering brought back the over-stocked condition in a majority of the principal lines and prices declined.

New levels were established in the automotive trade of 1927. Facilities for display and service were greatly improved and sales and registrations exceeded previous records. The market remained primarily one for low and medium priced cars. Automobile tire sales increased heavily, imports advancing approximately 70 per cent in both quantity and value.

As a result of generally active building and construction, the market for iron and steel products was good. American products met with price competition from European firms in some lines, particularly bars and light rails, but the United States was the principal source of galvanized sheets, heavy rails, and plates. Machinery trade, especially new installations in sugar and lumber mills, was normally active. Machinery houses generally reported satisfactory business.

The market for imported foodstuffs on the whole experienced a better year than in 1926, but there was very keen price competition. A tendency toward higher grades of canned goods reflected the greater degree of prosperity existing in the islands.

Foreign trade statistics.—The figures for the Philippines are compiled by the Bureau of Customs, Department of Finance, in the same way and on the same basis as the figures for United States trade, except that they are compiled in pesos.

The per capita imports and exports of the Philippines in 1926 were $10.15 and $11.65, respectively.

The tables are for total imports, whether or not for consumption, and for total exports, including reexports, except the table by commodities, which is for domestic exports only. Bullion and specie and gold and silver ore are not included in any of the totals.

In converting to dollars the peso was taken at its par value.

Value of Foreign Trade in Merchandise

Yearly average or year	Thousands of pesos		Thousands of dollars		Year	Thousands of pesos		Thousands of dollars	
	General imports	General exports	General imports	General exports		General imports	General exports	General imports	General exports
1901–1905	62,778	59,271	31,389	29,635	1917	131,594	191,209	65,797	95,604
1906–1910	66,739	69,558	33,369	34,779	1918	197,198	270,389	98,599	135,194
1911–1915	103,362	100,014	51,681	50,007	1919	237,278	226,236	118,639	113,118
1916–1920	191,188	223,991	95,594	111,996	1920	298,877	302,248	149,438	151,124
1921–1925	204,512	235,469	102,256	117,735	1921	231,677	176,231	115,839	88,115
1910	99,439	81,257	49,719	40,628	1922	160,395	191,167	80,198	95,583
1911	96,049	89,674	48,024	44,837	1923	174,999	241,506	87,500	120,753
1912	123,336	109,847	61,668	54,923	1924	216,022	270,689	108,011	135,345
1913	106,626	95,546	53,313	47,773	1925	239,466	297,754	119,733	148,877
1914	97,177	97,379	48,589	48,690	1926	238,598	273,769	119,299	136,884
1915	98,624	107,626	49,312	53,813	1927	231,703	311,148	115,851	155,574
1916	90,993	139,874	45,496	69,937					

General Imports of Principal Commodities

Commodity	Quantity				Value (thousands of dollars)			
	1913	1925	1926	1927	1913	1925	1926	1927
Total general imports					53,313	119,733	119,299	115,852
Meats and animal fats					2,053	2,564	2,697	2,918
Dairy products					1,211	2,905	3,259	3,291
Milk, condensed, evaporated, 1,000 lbs.	11,151	22,534	24,142	25,974	794	2,279	2,498	2,570
Fish					846	2,493	2,251	2,278
Grains and products					5,669	12,884	10,641	6,839
Rice, 1,000 lbs	191,779	223,105	155,390	27,583	3,165	6,413	4,534	1,075
Wheat flour, barrels	483,066	782,914	753,688	759,116	1,899	5,607	4,862	4,866
Vegetables					680	1,880	1,900	1,805
Fruits and nuts					386	1,162	1,149	1,249
Tobacco and manufactures					309	1,832	2,148	2,746
Cigarettes, thousands	5,112	361,564	417,971	542,092	30	853	960	1,321
Leather and manufactures					1,053	1,477	1,596	1,497
Cotton manufactures					11,844	27,598	28,235	23,043
Cloth, 1,000 sq. yds.	101,039	136,114	141,580	123,110	8,175	20,149	20,316	15,872
Fibers, vegetable, n. e. s.					502	2,565	2,455	2,279
Burlaps and bagging, 1,000 sq. yds.	2,585	15,107	13,060	14,829	140	1,378	1,266	1,135
Silk and manufactures					836	2,808	3,546	3,981
Paper and manufactures					819	1,849	2,157	2,344
Rubber manufactures					289	1,784	1,814	2,744
Coal, tons	552,555	462,449	537,147	469,523	1,584	2,142	2,617	2,304
Petroleum products					1,813	8,679	8,828	7,703
Crude fuel oil, 1,000 bbls.	4	1,506	1,154	1,017	5	2,427	1,296	1,114
Gasoline, naphtha, do.	44	305	348	340	353	2,833	3,540	3,149
Kerosene, do.	344	378	423	434	1,268	2,530	2,908	2,803
Lubricating oil, 1,000 galls.	536	2,393	3,071	2,415	161	768	955	556
Iron and steel					5,243	8,582	9,302	9,642
Sheets and plates, 1,000 lbs.	32,457	52,784	67,356	68,780	1,030	2,635	3,227	3,083
Machinery					3,948	7,031	5,929	6,052
Electrical					598	1,644	1,704	266
Sugar-mill					1,000	1,695	709	1,266
Vehicles					1,851	4,698	4,528	5,126
Automobiles, number	696	3,960	5,480	5,272	954	2,791	3,337	3,386
Chemicals, drugs, dyes, medicines					719	2,008	2,145	2,113
Fertilizers, tons	748	30,661	17,966	34,010	39	1,988	968	1,911
Books, printed matter					530	1,558	1,351	1,484
Gold bullion and coin [1]						638	402	282

[1] Not included in totals.

NOTE.—Values shown are f. o. b. country of shipment, exclusive of freight, insurance, and other charges

Domestic Exports of Principal Commodities

Commodity	Quantity				Value (thousands of dollars)			
	1913	1925	1926	1927	1913	1925	1926	1927
Total domestic exports					47,381	147,877	136,285	154,677
Coconuts, desiccated ..... 1,000 lbs.	(1)	27,609	31,587	33,474	(1)	2,609	2,758	2,850
Sugar ..... million lbs.	347	1,206	907	1,220	7,033	45,514	32,230	50,296
Copra meal and cake ..... 1,000 lbs.	(1)	122,990	157,113	200,094	(1)	1,698	1,736	2,485
Tobacco and manufactures					4,967	9,452	8,632	8,909
Leaf ..... 1,000 lbs.	28,089	36,560	31,611	52,004	1,855	3,065	2,681	3,919
Cigars ..... thousands	191,762	252,553	247,711	207,579	3,012	6,044	5,662	4,652
Textile fibers, vegetable ..... tons	(1)	178,167	172,644	171,990	21,774	39,373	35,040	32,690
Abaca (manila hemp) ..... do	117,929	148,639	151,610	146,476	21,121	35,522	32,142	29,687
Maguey ..... do	6,960	23,904	17,589	17,301	591	3,191	2,383	2,056
Manufactures of vegetable fibers					826	7,131	8,430	6,548
Cordage ..... 1,000 lbs.	609	12,121	10,065	12,284	62	1,677	1,405	1,667
Embroideries					176	4,561	5,954	3,879
Hats, all sorts ..... number	547,218	988,452	833,801	706,674	409	2,371	1,562	1,568
Buntal hats ..... do	218,947	910,132	672,260	658,984	322	2,335	1,520	1,533
Lumber and timber ..... 1,000 cu. ft.	644	4,369	5,186	6,030	324	2,126	2,553	2,794
Copra ..... 1,000 lbs.	181,263	323,437	383,647	439,419	9,546	15,869	18,587	19,156
Coconut oil ..... do	11,046	229,562	258,582	319,235	1,146	19,820	22,345	24,841
Gold ore, bullion, and coin [2]					868	2,014	1,947	1,600

[1] Not shown. [2] Not included in totals.

Trade with the United States by Principal Commodities

Commodity	Quantity				Value (thousands of dollars)			
	1913	1925	1926	1927	1913	1925	1926	1927
General imports from United States (total)					27,283	70,153	72,223	71,479
Milk, condensed, evaporated ..... 1,000 lbs.	2,157	22,362	23,808	25,598	141	2,259	2,462	2,541
Wheat flour ..... barrels	340,404	664,554	552,395	655,705	1,308	4,727	3,983	4,220
Tobacco and manufactures					253	1,702	1,968	2,465
Leather and manufactures					943	1,378	1,497	1,404
Cotton manufactures					7,007	14,459	16,396	12,156
Cloth ..... 1,000 sq. yds.	75,110	84,124	95,995	75,444	6,035	11,957	13,264	9,471
Paper and manufactures					469	1,124	1,400	1,433
Rubber manufactures					258	1,592	1,633	2,590
Mineral oils ..... 1,000 bbls.	366	1,667	1,594	1,418	1,656	6,745	7,532	6,371
Crude ..... do		1,118	881	759	1	1,805	937	772
Gasoline, naphtha ..... do	36	208	278	247	309	2,054	2,994	2,577
Kerosene ..... do	317	300	376	370	1,189	2,281	2,736	2,550
Iron and steel					4,054	6,265	6,814	6,840
Sheets and plates ..... 1,000 lbs.	25,964	46,560	60,531	60,374	857	2,419	3,049	2,897
Machinery					2,795	6,402	5,139	4,546
Electrical					507	1,428	1,424	237
Sugar-mill					664	1,682	641	559
Vehicles					1,179	4,545	4,417	4,889
Automobiles ..... number	605	3,958	5,468	5,125	767	2,789	3,317	3,289
Chemicals, drugs, dyes, medicines					352	1,438	1,536	1,545
Books, printed matter					221	1,369	1,178	1,239
Domestic exports to United States (total)					16,469	108,920	100,162	115,685
Coconuts, desiccated, shredded ..... 1,000 lbs.		27,583	31,554	33,371		2,606	2,754	2,841
Sugar ..... 1,000,000 lbs.	68	1,023	752	1,121	1,564	41,417	29,162	47,887
Tobacco and manufactures					1,784	5,445	4,959	4,029
Cigars ..... thousands	76,653	214,450	203,638	167,300	1,761	5,248	4,801	3,769
Abaca (manila hemp) ..... tons	46,439	58,976	60,882	47,782	9,789	18,201	16,301	12,262
Embroideries					176	4,560	5,954	3,853
Hats ..... number	266,511	769,882	674,869	325,888	252	1,855	1,191	887
Lumber and timber ..... 1,000 cu. ft.	411	2,094	2,556	3,295	230	1,132	1,395	1,724
Copra ..... 1,000 lbs.	22,108	256,085	284,575	347,950	1,199	12,582	13,816	15,238
Coconut oil ..... do	10,594	212,469	253,382	312,149	1,095	18,428	21,926	24,284

Trade With Principal Countries (in Thousands of Dollars)

Country of origin or destination	General imports				General exports			
	1913	1925	1926	1927	1913	1925	1926	1927
Total	53,313	119,733	119,299	115,851	47,773	148,877	136,884	155,574
United States	27,283	70,153	71,576	71,478	16,561	109,397	100,063	116,038
Per cent of total	51.18	58.59	60.54	61.70	34.67	73.48	73.31	74.69
France	1,448	1,353	1,160	1,644	5,483	1,879	3,024	1,586
Germany	2,888	2,765	3,342	3,559	1,742	2,333	3,007	3,149
Italy	230	389	494	447	496	1,814	1,778	1,852
Netherlands	183	535	520	592	287	1,815	1,595	1,655
Spain	1,239	708	783	876	2,453	4,352	4,164	5,692
Switzerland	702	1,261	1,348	1,226	49	22	23	54
United Kingdom [1]	5,376	6,743	5,384	5,386	9,069	11,230	6,820	8,563
China	2,185	6,964	6,614	6,459	1,646	3,470	3,195	2,618
British East Indies	665	2,707	2,654	2,363	1,327	1,137	1,200	1,399
Netherland East Indies	426	3,291	2,796	2,788	61	308	216	246
French East Indies	2,708	6,503	4,536	1,221	12	36	57	48
Hong Kong	529	185	166	280	3,179	1,923	1,514	1,375
Japan	3,393	10,945	11,614	11,093	3,925	5,868	7,309	7,724
Australia [2]	2,678	2,922	2,883	2,254	617	977	809	902

[1] Includes Irish Free State. [2] Includes New Zealand in 1913.

Entrances and Clearances.—The total number of vessels engaged in foreign trade entered at Philippine ports in 1927 was 1,095, with a capacity of 4,150,152 net registered tons (4,098,000 in 1926), of which 3,575,550 tons were vessels with cargo and the cargo weighed 1,706,069 tons (1,572,000 in 1926). Of this total, 1,391,252 net registered tons were American, 139,672 Philippine, 1,369,056 British, 210,756 Dutch, 451,431 German, and 509,296 Japanese. Entrances at the principal ports were as follows: Manila 3,506,434 net registered tons; Iloilo, 231,656; and Cebu, 266,333. There were 1,093 vessels cleared in 1927, with a capacity of 4,133,611 net registered tons (4,079,000 in 1926), of which 3,496,554 tons were vessels with cargo and cargo weighing 1,302,686 metric tons (1,090,000 in 1926).

The number of Philippine vessels engaged in coastwise trade in 1927 was 1,792 (1,658 in 1926), with a capacity of 89,786 net registered tons (83,914 in 1926). Entrances at the ports were as follows: Manila, 848,726 net registered tons (823,065 in 1926); Iloilo, 773,095 (722,855 in 1926); Cebu 715,157 (576,202 in 1926); and Zamboanga 232,814 (237,198 in 1926).

FINANCE

Government finances in 1927 were in a generally favorable condition. Although revenues decreased compared with 1926, as the result of smaller customs receipts, government expenditures were less and the year's budget showed a surplus of approximately 10,000,000 pesos ($5,000,000). Government enterprises experienced an exceptionally good year. Total net profits of the Philippine National Bank, amounting to 4,300,000 pesos ($2,150,000) were twice as large as in 1926. Sugar centrals operated by the government bank made good profits, and the Cebu Portland Cement Co. was able to pay off its bank indebtedness.

Private business financing improved as the year advanced. There were several notable failures among Chinese merchants, but at the close of the year dealers in general were better situated than a year previous. Money was plentiful at easy rates and 440 new enterprises were registered, with combined authorized capital of over $18,500,000. Savings deposits throughout the Provinces increased $500,000 over 1926.

Finance Statistics.—Total receipts for 1926 amounted to 78,413,000 pesos ($39,207,000); total expenditures, to 90,949,000 ($45,475,000). Figures for the preceding year were 84,390,000 ($42,195,000) and 75,187,000 pesos ($37,594,000), respectively. The principal items of revenue are excise taxes and import duties; they amounted to 21,527,000 and 17,056,000 pesos, respectively, during 1926. Expenditures during 1926 were mainly for: Aid to local governments, 14,356,000 pesos; debt service, 10,438,000; rehabilitating the Philippine National Bank, 11,811,000. Final data for 1927 are not available.

The net bonded indebtedness on December 31, 1926, amounted to 164,289,000 pesos ($82,145,000); the sinking fund was 33,678,000 pesos ($16,839,000).

The unit of currency is the peso, equivalent to 50 cents in United States currency. The maintenance of its parity with gold is provided for by the gold standard fund act of June 13, 1922. The circulating media consisted, on December 31, 1926, of the following: Bank notes, 36,012,000 pesos; treasury certificates, 66,483,000; and Philippine coins, 21,151,000, or a total of 123,646,000 pesos ($61,823,000). The corresponding total for December 31, 1925, was 132,842,000 pesos ($66,421,000).

LEGISLATION

Important bills passed by the legislature included a measure regulating interisland shipping; a bill requiring adequate radio equipment on interisland vessels; and an act providing for the organization of cooperative marketing associations.

PORTO RICO

GENERAL ECONOMIC TRENDS

Business was active during the first half of the year, as a result of the operations of the sugar mills and the steady shipments of fruit, but was generally dull in the second half owing to the difficulty in disposing of an unusually large tobacco crop of inferior quality and the weakening tendency of sugar and tobacco prices. The failure to agree on prices in the tobacco market in the second half of the year delayed the liquidation of outstanding accounts by growers, and the credit situation was unsatisfactory with collections difficult, especially in interior towns. The reopening of the sugar-grinding campaign in December and the holiday buying season materially benefited business.

Insular finances were in good shape and although revenues decreased the drop is not significant, inasmuch as collections in 1925–26 included back taxes which had been in litigation, and as lower rates

of internal taxation were applied to cigars and cigarettes, reducing the revenues from that source by more than one-half. The budgetary expenditures were met and about $1,000,000 paid on the floating debt. Trade with the United States and foreign countries amounted to over $200,000,000, the largest figure since 1920.

AREA AND POPULATION

Porto Rico has an area of 3,435 square miles, with a population in 1920 (census) of 1,299,809, or 378.4 per square mile. The males numbered 647,825 and the females 651,984. The whites constituted 73 per cent of the population, mulattoes and blacks 27 per cent, and Chinese, Japanese, and Hindus less than one-tenth of 1 per cent. The rural population constituted about 78 per cent of the total. The growth of the population has been as follows: 1900, 973,387; 1910, 1,118,012; 1920, 1,299,809; 1928 (estimated), 1,456,000.

The average number of births per year from 1923 to 1927 was 55,262 and of deaths 30,335, the excess of births being 24,927. The average birth rate per 1,000 inhabitants was thus 39.5 and the death rate 21.7

In 1926–27 the total enrollment in all public schools was 213,321. In addition to the persons enrolled in public schools, 6,489 attended private schools. The university enrollment was 2,850. Illiteracy during the last 25 years has been reduced from 83 per cent to below 40 per cent.

In 1920 the population of the chief cities was as follows: San Juan, 71,443; Ponce, 41,912; Mayaguez, 19,124. Present estimates are 100,000 in San Juan, 46,500 in Ponce, and 21,000 in Mayaguez.

AGRICULTURE

Production statistics in Porto Rico, except as to sugar, are only estimates. Besides the major crops discussed below, rice, coconuts, and various textile fibers are raised. All crops, except coffee, were larger in 1926–27 than in the preceding year, but the agricultural situation was not entirely satisfactory. The value of exports of sugar and tobacco and fruits was greater than in 1925–26, but shipments of coffee were considerably reduced as a result of the hurricane of 1926. Weather conditions throughout 1927 were fairly satisfactory, although there were periods of extreme drought which threatened serious damage. Overproduction of tobacco created a difficult market situation. Heavy rains at the close of the year reduced both the coffee and tobacco estimates for 1928, but this was largely compensated for by reports of better quality crops. A closer cooperation between the sugar mill owners and planters and the interest displayed in agricultural science were outstanding features.

Sugar.

The 1927–28 sugar crop is estimated at 673,000 short tons, as compared with 629,000 tons in 1926–27 and 603,000 tons in 1925–26.

Although production in 1926–27 was somewhat below the record crop of 1924–25, the returns were $1,495,000 higher. There was no appreciable increase in rainfall or acreage, and the satisfactory production is largely attributed to improved cultivation and to selection of disease-resisting canes. The average invoice price of sugar in 1926–27 was $0.0476, as compared with $0.0416 in 1925–26 and $0.0466 in 1924–25.

Tobacco.

The tobacco yield of 1927 is estimated at 46,700,000 pounds, the highest on record, surpassing the 1926 crop by over 10,000,000 pounds. In contrast with the prosperous conditions in 1926, the planters were obliged to market a record crop of inferior quality which they were unable to dispose of within the usual marketing period. The increase in tobacco production was largely a result of the satisfactory prices during the two immediately preceding years. Plantings were increased from approximately 45,000 to 85,000 acres and, owing to the wet season, storage facilities proved inadequate. The merchants and planters were unable to agree on prices, and large stocks of tobacco remained unsold at the close of the year. However, advance reports of the 1928 crop indicated a normal production of good quality leaf and created increasing optimism.

Sales of cigars and cheroots fell off considerably as a result of the prolonged strike in the tobacco factories throughout 1926 and up to April, 1927. The value of leaf tobacco, cigars, and cigarettes shipped to the United States during the year amounted to $19,685,000 compared with $25,928,000 in the previous year.

Coffee.

As a consequence of the hurricane of 1926, which occurred during the blossoming period and damaged 40 per cent of the crop, coffee production in 1926–27 reversed the upward trend of the three preceding years. Exports in 1926–27 were about one-fourth less than in the year before. The demand for Porto Rican coffee, the bulk of which is sold in Cuba and Europe, is apparently slowly declining, notwithstanding that the price has steadily risen from 14 cents in 1920–21 to 29.6 cents in 1926–27. Reports of the 1927–28 crop indicate a production not exceeding 15,000,000 pounds, as compared with 32,000,000 pounds in 1926–27. As local consumption is estimated at 12,000,000 pounds, it is believed that considerable importations of foreign coffee will be made to supply the local market in order that as much as possible of the Porto Rican coffee may be exported. To overcome the increasing indifference to coffee growing, the insular department of agriculture has organized an energetic drive for more intensive cultivation, with practical demonstrations.

Fruit.

Fruit growing and canning is rapidly expanding, and shipments of canned fruits to the United States during the calendar year 1927 increased 57.5 per cent over 1926, while fresh-fruit shipments increased 26.5 per cent. The most striking increase was in grapefruit. Porto Rican fruits had to compete with the Florida crops until May, or somewhat longer than usual. This resulted in the diversion of a large part of the surplus grapefruit to the canneries, which paid very good prices. Rainy weather injured the pineapple crop, but more favorable weather conditions later on were reflected in increasing shipments of all fruits.

Cotton.

Cotton growing has been receiving increasing attention and plantings are larger each year. The 1926 production was nearly 1,000,000 pounds and prices were satisfactory, but in 1927 a sudden drop in prices made it difficult for planters even to cover expenses in spite of an increase in production. Exports of cotton increased about 6 per cent in 1927, prices dropping from a range of 10 to 12 cents a pound in 1926 to 9 to 9½ cents in 1927.

Livestock.

The 1920 census gave the number of livestock as follows: 278,900 cattle, 136,800 swine, 4,400 sheep, 58,000 goats, and 57,000 horses.

Forestry.

The Insular Forestry Service distributed 678,000 seedlings and plantings as compared with 435,000 in 1926. Government preserves were likewise given greater attention and 110,454 trees were set out in comparsion with 63,486 trees in the previous year. Forestry projects include the establishment of two new subnurseries located at Maricao and San German.

MANUFACTURING INDUSTRIES

The manufactures of sugar, cigars, fine needlework and women's wear, and men's clothing are the chief industries of Porto Rico. An extensive industrial survey with a view to expanding the opportunities for employment has been proposed. Several large American companies have made independent surveys with a view to locating on the island. The sugar industry experienced another year of satisfactory production and good prices.

The prolonged strike in the cigar factories, lasting until May, caused considerable loss. As a result the output of cigars was 93,672,000 less than in the preceding year. The total number of cigars produced by fiscal years was in 1913, 284,807,000; 1922, 218,017,000; 1926, 323,123,000; 1927, 229,451,000. The total num-

ber of cigarettes produced was in 1913, 473,769,000; 1922, 436,709,000; 1926, 375,522,000; 1927, 354,454,000.

The production of fine needlework and women's wear continues to expand; it employs approximately 40,000 women; most of the work is done in the home. The wages are low, but form a valuable adjunct to the irregular income of the men.

LABOR AND LIVING CONDITIONS

The density of population makes unemployment a constant problem. The low-wage scale is a concomitant of overpopulation aggravated by the almost complete dependence on sugar. Little progress was made in 1927 in bettering the condition of the laborer, although more were employed in the sugar and tobacco harvesting periods, which lasted somewhat longer than usual. The low-average daily wage of 60 cents on the coffee plantations is largely responsible for the movement of farm hands from the coffee areas to other agricultural sections. The increased plantings of tobacco failed to bring higher wages in that industry. Fruit laborers probably receive better returns than any other agricultural workers. The fruit-canning industry pays the women from 75 to 80 cents a day. Those engaged in the manufacture of men's clothing receive a wage of $1 for an eight-hour day. The sale of houses on the installment plan proved unsatisfactory, and this reacted unfavorably upon the building trades.

The movement of approximately 1,000 workers to Arizona for work in the cotton fields in 1927 has worked out satisfactorily and it is believed that only the high cost of passage deters other workers from seeking employment in the United States. During the year 23,543 workers left Porto Rico for the United States, of whom 14,553 returned.

TRANSPORTATION AND COMMUNICATION

There are about 335 miles of railway line in Porto Rico. There were 93 post offices on July 1, 1927, and during the year 1926–27 gross receipts amounted to $537,000. In 1925 there were 1,072 miles of telegraph wire, 27,745 miles of telephone wire, 13,374 telephone instruments; 325,000 telegrams were sent; and gross receipts were $123,000 for telegraphs and $764,000 for telephones.

TRADE WITH THE UNITED STATES AND FOREIGN COUNTRIES

Exports.

Porto Rico maintained a favorable trade balance amounting to $6,895,000 in 1927, continuing the trend since 1924. Trade with the United States amounted to $183,221,000, or 90.7 per cent of the island's total commerce. Adjusting the trade returns of 1925–26 to the new statistical methods, an increase of approximately 3 per cent

in the United States trade and of 1 per cent in trade with foreign countries during 1927 over 1926 is noted. Sugar was exported solely to the United States; both quantity and value were greater than in 1926. Coffee was sent chiefly to Cuba and to European countries, but the exports of Porto Rican coffee are steadily decreasing. Fruit and tobacco were sold in the United States at prices slightly below those of 1926. The handicraft women's wear was shipped in larger quantities, the most notable increase being in handkerchiefs.

Value of Trade in Merchandise (in Thousands of Dollars)

Yearly average or year	General imports			General exports		
	From United States	From other countries	Total	To United States	To other countries	Total
1903–1905	13,655	2,228	15,883	13,564	4,033	17,597
1906–1910	25,335	3,299	28,634	26,113	4,420	30,533
1911–1915	33,739	3,745	37,484	39,397	7,217	46,614
1916–1920	68,456	4,944	73,400	90,940	10,233	101,173
1921–1925	70,355	8,546	78,901	76,482	6,397	82,879
1910	31,390	3,826	35,216	35,766	6,040	41,806
1911	36,794	4,598	41,392	35,446	5,627	41,073
1912	35,085	3,994	39,079	41,633	8,298	49,931
1913	33,670	3,740	37,410	40,124	8,473	48,597
1914	30,714	3,556	34,270	35,462	7,202	42,664
1915	32,434	2,833	35,267	44,318	6,485	50,803
1916	43,057	3,514	46,571	68,292	6,151	74,443
1917	55,816	3,867	59,683	74,074	9,534	83,608
1918	54,043	4,569	58,612	75,690	8,057	83,747
1919	67,800	5,261	73,061	78,320	11,076	89,396
1920	121,562	7,512	129,074	158,322	16,347	174,669
1921	60,977	7,377	68,354	71,988	6,754	78,742
1922	57,968	6,849	64,817	60,105	5,012	65,117
1923	76,920	7,547	84,467	80,303	5,769	86,072
1924	78,412	9,337	87,749	77,331	7,398	84,729
1925	77,500	11,621	89,121	92,680	7,053	99,733
1926	84,738	12,664	97,402	90,167	7,580	97,747
1927	86,319	11,264	97,583	96,902	7,558	104,460

Trade in Merchandise With Principal Countries (in Thousands of Dollars)

Country of origin or destination	General imports				General exports			
	1913	1925	1926	1927	1913	1925	1926	1927
Total	37,410	89,121	97,402	97,583	48,597	99,733	97,747	104,460
United States	33,670	77,500	84,738	86,319	40,124	92,680	90,167	96,902
Per cent of total	90.00	87.00	87.00	88.45	82.56	92.93	92.24	92.76
Canada	657	947	938	821	10			
Cuba	50	620	404	985	3,634	2,586	2,366	802
Dominican Republic	30	1,901	1,688	1,704	47	1,996	2,095	2,506
Netherland West Indies	10	1,284	1,007	1,024	25	475	365	503
Austria-Hungary [1]	9	25	21		1,115			
France	353	182	193	212	999	2	9	133
Spain	742	904	1,423	723	1,240	771	1,019	1,284
United Kingdom	371	655	680	834	75	19		41
British India	297	1,075	1,409	793				

[1] Figures for postwar years represent trade with Austria, Czechoslovakia, and Hungary, combined.

Imports.

The United States continued to supply the great majority of Porto Rican needs in spite of growing competition from European nations, chiefly evidenced in cutlery, cement, paper, and iron and steel

products. In all these lines, however, the United States surpassed its competitors although the small but steady rise of German sales in Porto Rico since 1922 is worthy of notice. British India's participation in Porto Rican trade is entirely traceable to increasing purchases of jute bags. Argentina and Uruguay continued to send meats, the Netherlands and Denmark furnished potatoes, cleaned rice came from Spain, newsprint from Germany, agricultural implements from the United Kingdom and Germany, and cement from Denmark. The usual imports of tobacco from Cuba and lumber from the Dominican Republic occurred during the year.

Shipments to the United States by Principal Commodities

Commodity	Quantity (000 omitted)				Value (thousands of dollars)			
	1913	1925	1926	1927	1913	1925	1926	1927
Fruits					3,115	5,305	5,186	6,817
Grapefruit, fresh, boxes [1]	(2)	781,258	683,729	879,428	(2)	2,404	2,061	2,687
Oranges, fresh, do	412,655	485,252	316,078	371,980	872	1,249	796	903
Pineapples, fresh, crates [1]	(2)	376,106	494,344	641,518	1,247	1,141	1,500	1,925
Coconuts, number	(2)	18,869	20,582	22,578	434	705	567	652
Sugar, pounds	750,428	1,200,825	1,118,497	1,148,127	25,655	53,713	46,530	55,337
Molasses and sirups, gallons	13,959	22,070	26,034	16,697	753	1,475	932	767
Tobacco, unmanufactured, pounds	7,540	25,337	31,876	30,862	3,127	13,138	20,989	15,698
Leaf, unstemmed, do	6,497	3,762	8,667	6,626	3,004	1,740	5,045	2,953
Leaf, stemmed, do		16,596	18,594	17,420		10,509	14,896	11,554
Tobacco, manufactured					5,806	7,767	4,939	3,988
Cigars and cheroots, number	163,248	207,110	177,501	147,555	5,791	7,739	4,898	3,936
Cotton manufactures					1	1,152	1,211	1,969
Handkerchiefs, dozen	(2)	1,104	1,018	954	(2)	1,104	1,036	1,237
Clothing of cotton, pounds	(2)	2,485	3,512	3,935	(2)	6,560	7,230	7,248
For women and children, do	(2)	2,481	3,497	3,905	(2)	6,552	7,201	7,188

[1] Full number (000 not omitted). [2] Not shown.

Merchandise Received from United States by Principal Commodities

Commodity	Quantity (000 omitted)				Value (thousands of dollars)			
	1913	1925	1926	1927	1913	1925	1926	1927
Meats					2,309	4,171	4,387	4,247
Pork, pickled, pounds	13,467	12,183	5,678	15,077	1,513	1,792	796	1,669
Lard, do	3,730	10,984	15,559	14,952	467	2,047	2,585	2,152
Dairy products, do	2,646	6,310	7,508	7,728	257	1,248	1,347	1,363
Cheese, do	291	2,722	2,683	2,274	53	522	500	427
Fish, do	(1)	19,946	22,244	21,380	505	1,781	1,853	1,561
Grains and products					7,790	12,372	14,467	12,799
Rice, pounds	134,905	140,590	181,660	194,381	5,478	7,843	9,596	8,513
Wheat flour, barrels [2]	330,144	394,550	426,006	414,136	1,616	3,002	3,144	2,888
Vegetables					768	3,039	3,155	3,299
Beans and peas, dried, bushels [2]	191,839	460,598	515,526	569,204	509	2,002	1,834	1,966
Tobacco					374	1,400	2,151	2,565
Leaf, pounds	2,112	3,326	4,247	3,606	334	723	949	1,164
Leather and manufactures					1,564	3,323	3,182	3,879
Boots and shoes, pairs	1,086	1,706	1,658	2,024	1,340	3,021	2,883	3,511
Cotton manufactures					3,438	9,391	9,891	9,374
Cotton cloth, square yards	(1)	42,988	40,253	40,416	2,376	7,650	6,284	6,283
Wearing apparel					1,184	2,840	3,051	3,642
Cotton clothing					1,060	2,510	2,534	3,056
Wood					1,939	3,801	4,647	3,747
Boards, planks, deals, board feet	40,068	62,445	70,024	57,402	879	2,032	2,326	1,918
Paper					435	1,295	1,307	1,537
Rubber manufactures					410	1,341	1,405	1,494
Automobile tires, number [2]	(1)	108,226	105,665	115,527	307	869	983	788
Mineral oils					671	2,471	2,703	2,901
Gasoline, naphtha, etc, barrels [2]	37,637	237,993	232,309	159,083	303	1,314	1,272	828
Iron and steel					1,999	4,641	4,664	5,420
Machinery					1,034	2,615	2,740	3,784
Vehicles					631	3,539	3,528	3,987
Automobiles, number [2]	294	3,720	3,030	2,858	365	2,843	2,784	2,750
Chemicals					544	1,632	1,590	1,771
Fertilizers, tons [2]	14,952	55,419	59,161	55,250	683	2,349	2,833	2,494

[1] Not shown. [2] Full number (000 not omitted).

Basis of Trade Statistics.—Trade statistics for Porto Rico are compiled by the Department of Commerce of the United States in the same way and on the same basis as those for continental United States.

The per capita trade of Porto Rico in 1927 (including that with the United States) amounted to $68 for imports and $73 for exports.

The summary table and the table by countries show general imports, whether or not for consumption, and general exports, including reexports. Tables by commodities include trade with the United States only. Gold and silver are excluded from all the tables.

Entrances and Clearances.—The number of vessels engaged in foreign trade entered at Porto Rican ports in 1927 was 1,166, with a capacity of 1,124,000 net registered tons (927,000 in 1926). Of these 808 vessels with a capacity of 693,000 net registered tons (819,000 in 1926) carried cargo, of which 653,000 tons were American. There were 1,194 vessels cleared in 1927 with a capacity of 1,218,000 net registered tons (977,000 in 1926), of which 803 vessels with a capacity of 889,000 net registered tons (635,000 in 1926) carried cargo. The figures do not include vessels trading with the United States.

GOVERNMENT FINANCES

The fiscal year ended June 30, 1927, was auspicious as a result of favorable court decisions and legislation tending to eliminate the long delays by litigation to avoid payment of taxes. The collection of some of these taxes which had been long overdue had produced an abnormal increase in revenue during 1925–26, a fact largely explaining the decrease in 1926–27. However, reduction in tax rates on cigars and tobacco manufactures cut down the internal revenue by approximately one-half. On the other hand, excise taxes and other minor sources of revenue increased. A payment of about $1,000,000 was made on the floating debt.

The insular bonded debt showed practically no change. Transactions during 1926–27 included the new bond issue of $525,000 for the carrying out of the Isabella irrigation project and the payment on the outstanding bonded indebtedness of $514,000. Bank clearings during the year totaled $276,127,000 as compared with $261,850,000 in 1926.

Finance Statistics.—The net amount of operating revenue during the fiscal year ending June 30, 1927, was $11,192,000, as against $11,740,000 for the preceding year. The net operating expenses were $10,762,000 and $10,103,000, respectively. The principal sources of revenue during 1926–27 were: Excise taxes, $5,702,000; customs, $1,807,000; and income tax, $1,566,000. Expenditures were mainly for: Education, $4,077,000; interior, $1,418,000; and health, $1,148,000.

The bonded debt on June 30, 1927, amounted to $22,965,000, as against $22,954,000 on June 30, 1926. The sinking fund on June 30, 1927, amounted to $1,663,000. The debt was contracted mostly for public improvements—roads, schools, and other public buildings. The floating debt was about $3,000,000 as against $4,000,000 on June 30, 1926.

The currency is that of the United States.

LEGISLATION

The year was one of considerable legislative activity. Especially notable was the amendment to the organic act, which, among its provisions, changed the session of the legislature from semiannual to annual, increased the compensation of members, provided that the public debt of Porto Rico and its municipalities shall not exceed 10 per cent of the assessed value of taxable property, provided that all citizens of the United States who reside in the island for one year shall be considered citizens of the island, limited the public service commissioners to three, and provided that no suit for the purpose of restraining or hindering the collection of taxes may be brought before the United States District Court for Porto Rico.

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